

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22001	Side Frame, Terminal	2
2	GE-22002	Front Frame, Terminal	1
3	GE-22003	Horizontal Support, Terminal	2
4	GE-22004	Chute Assembly, Terminal	2
5	GE-22007	Conduit, Terminal	2
6	GE-22008	Plastic, Purple Plane	2
7	GE-22009	Guard Assembly, Terminal	1
8	GE-22013	Side Plastic, Terminal	2
9	GE-22014	Front Plastic, Terminal	1
10	GE-22016	Outer Ramp Assembly, Left	1
11	GE-22017	Outer Ramp Assembly, Right	1
12	GE-22022	Inner Ramp	2
13	GE-22024	Edge Protector 46"	4
14	GE-22026	Terminal Chain	1
15	GE-22027	Roof	2
16	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
17	pin_quick_ring_.25_2.3125	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 2.3125" Usable Length	8

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN	DF	1/2/2022
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING		TITLE: Terminal Assembly		
		SIZE	DWG. NO.	REV
		C	GE-22000	
		SCALE: 1:12		SHEET 1 OF 5



4

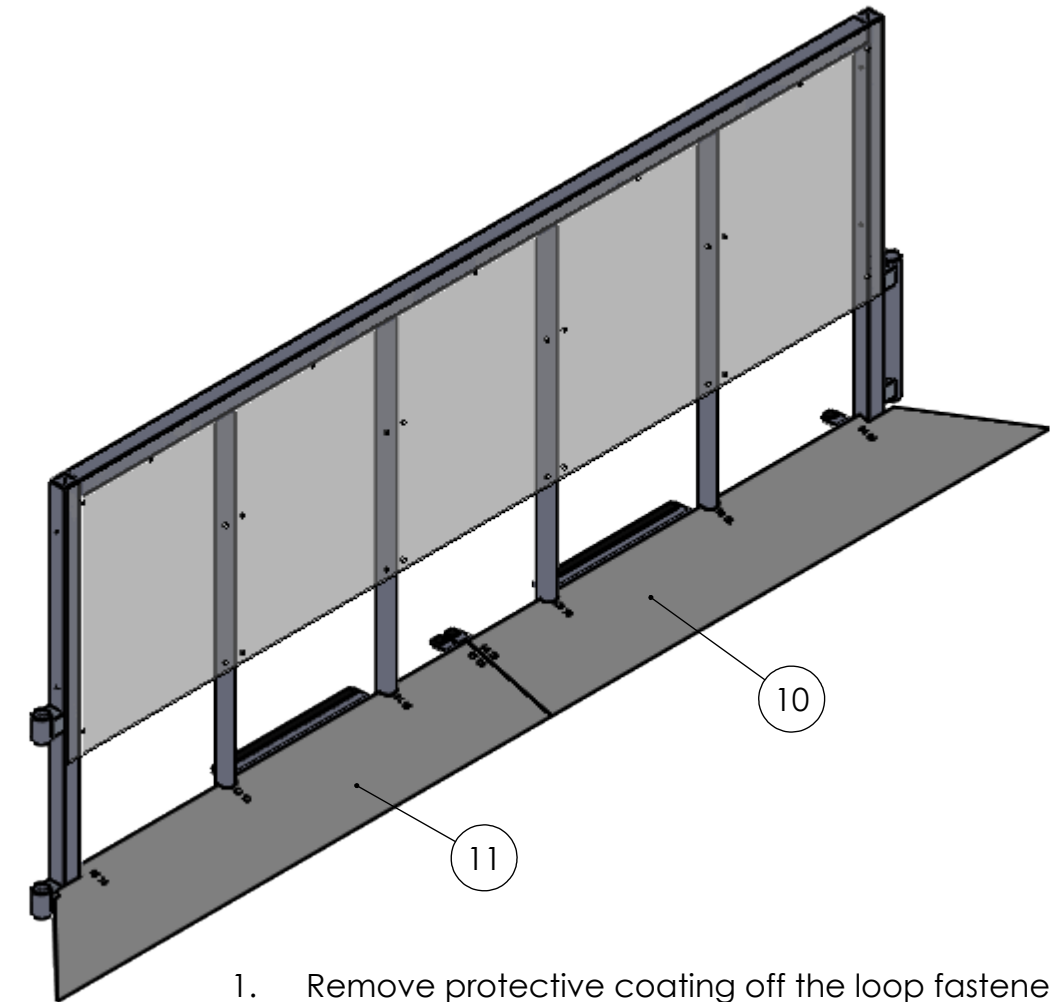
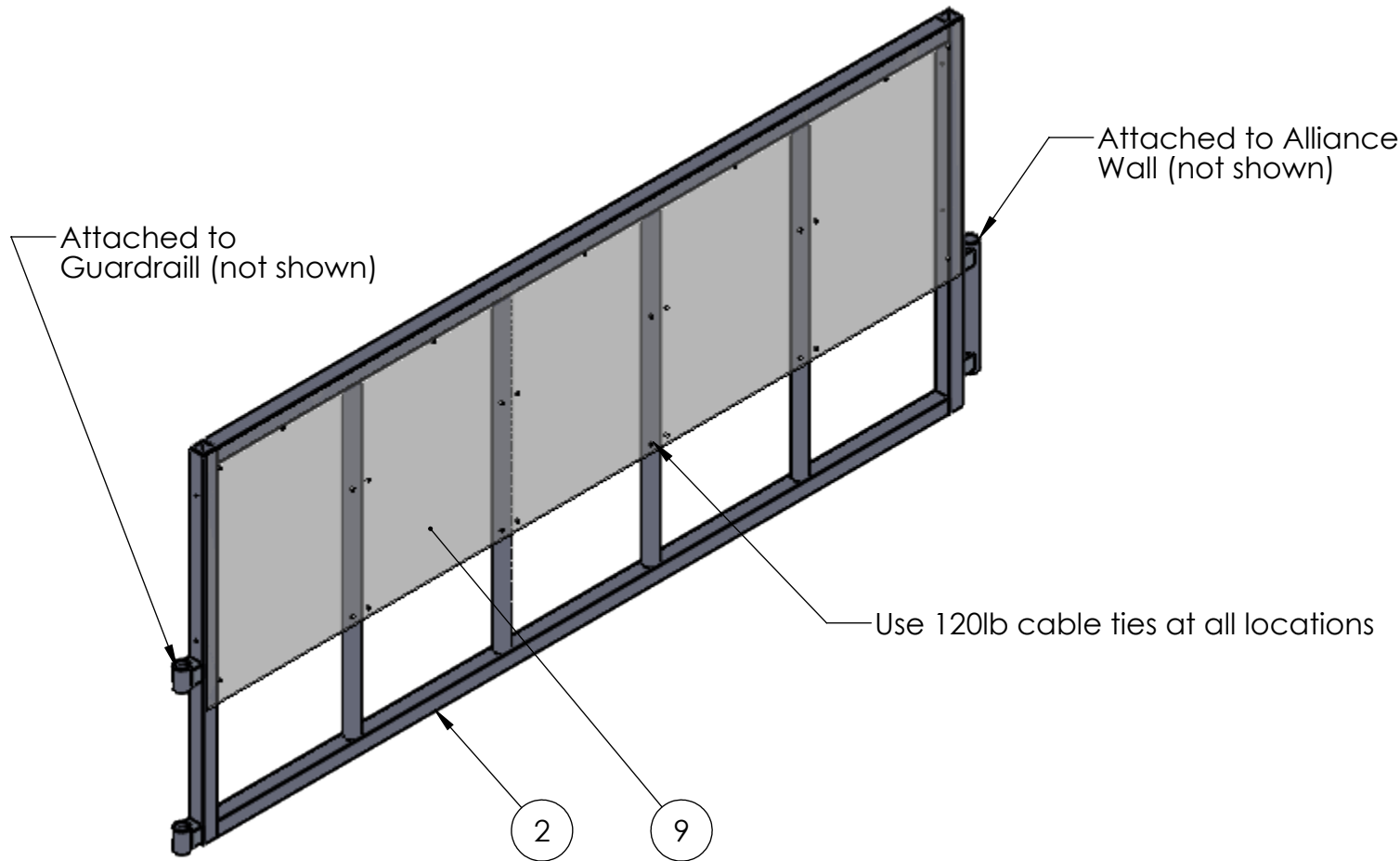
3

2

1

D

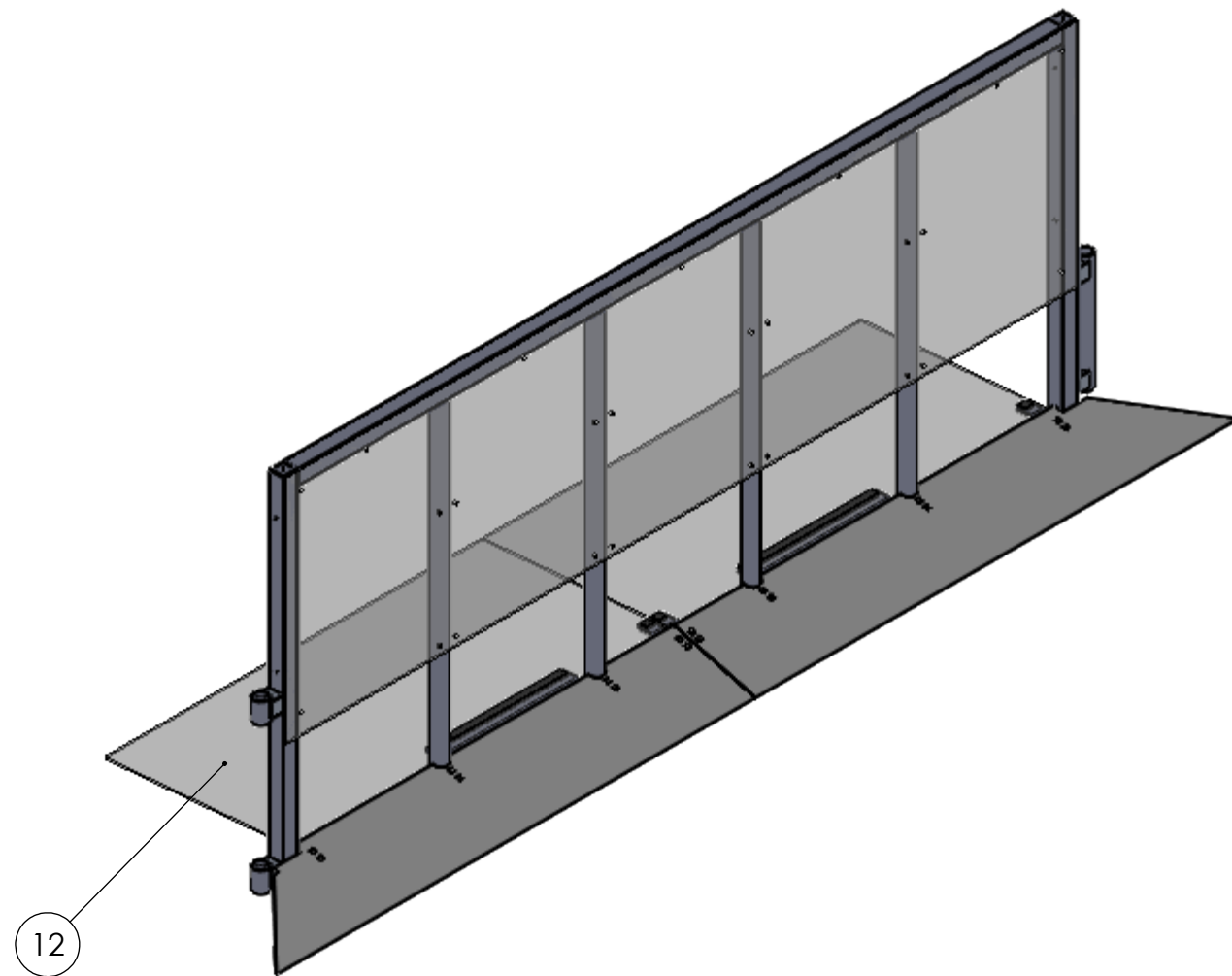
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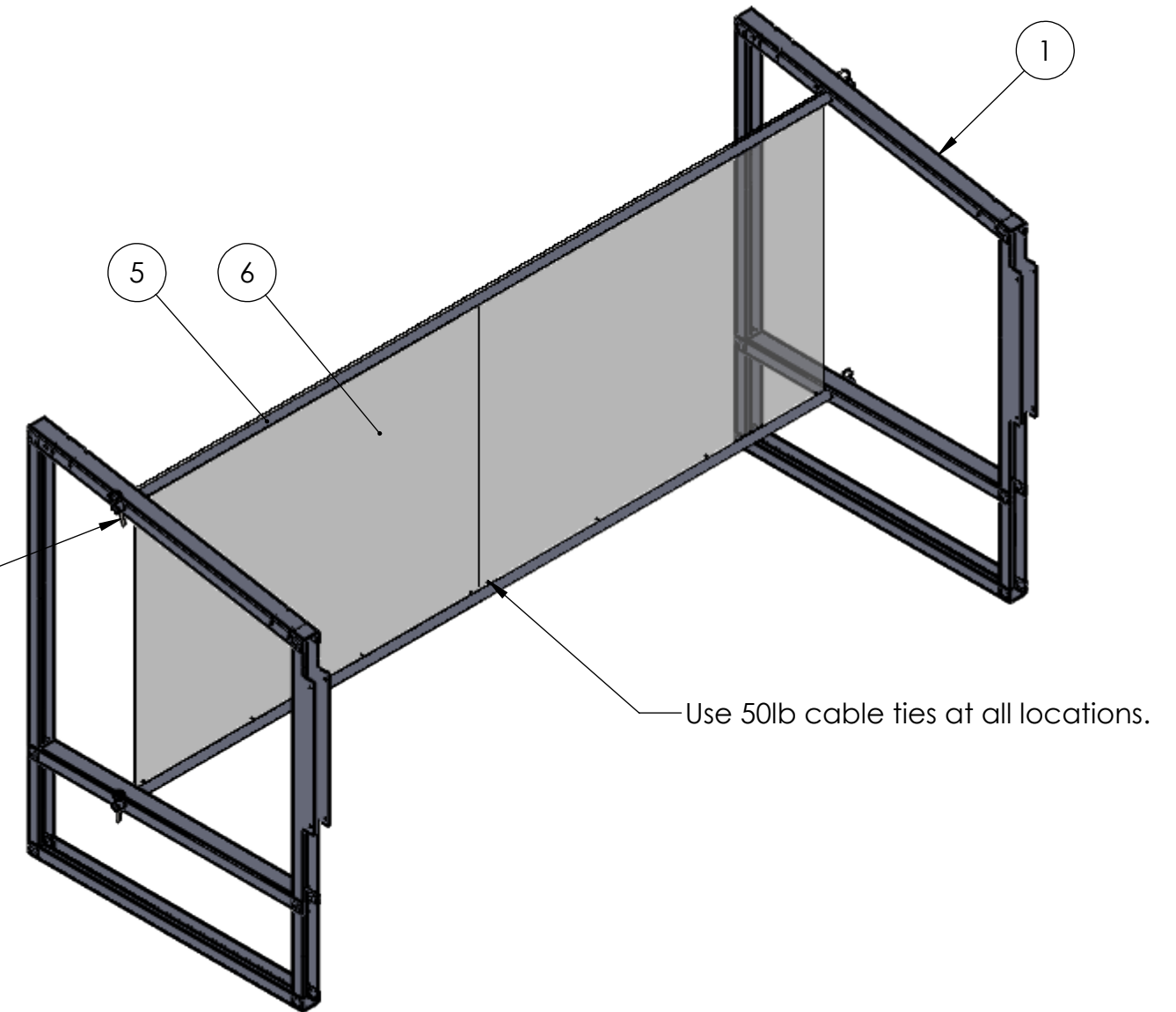
1. Remove protective coating off the loop fastener on Items 10 and 11.
2. Press Items 10 and 11 on to Item 2 firmly as shown to adhere the fastener.

C

C



Press Item 12 (x2) to Items 10 and 11 as shown to ensure loop fastener adheres to Item 12.



Lock Item 5 in place with Item 17, 4 places.

B

B

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	TITLE: <div>Terminal Assembly</div>		
	DRAWN	DF	1/2/2022			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			SIZE <div>C</div> DWG. NO. <div>GE-22000</div> REV		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:				SCALE: 1:16		SHEET 2 OF 5
DO NOT SCALE DRAWING						

4

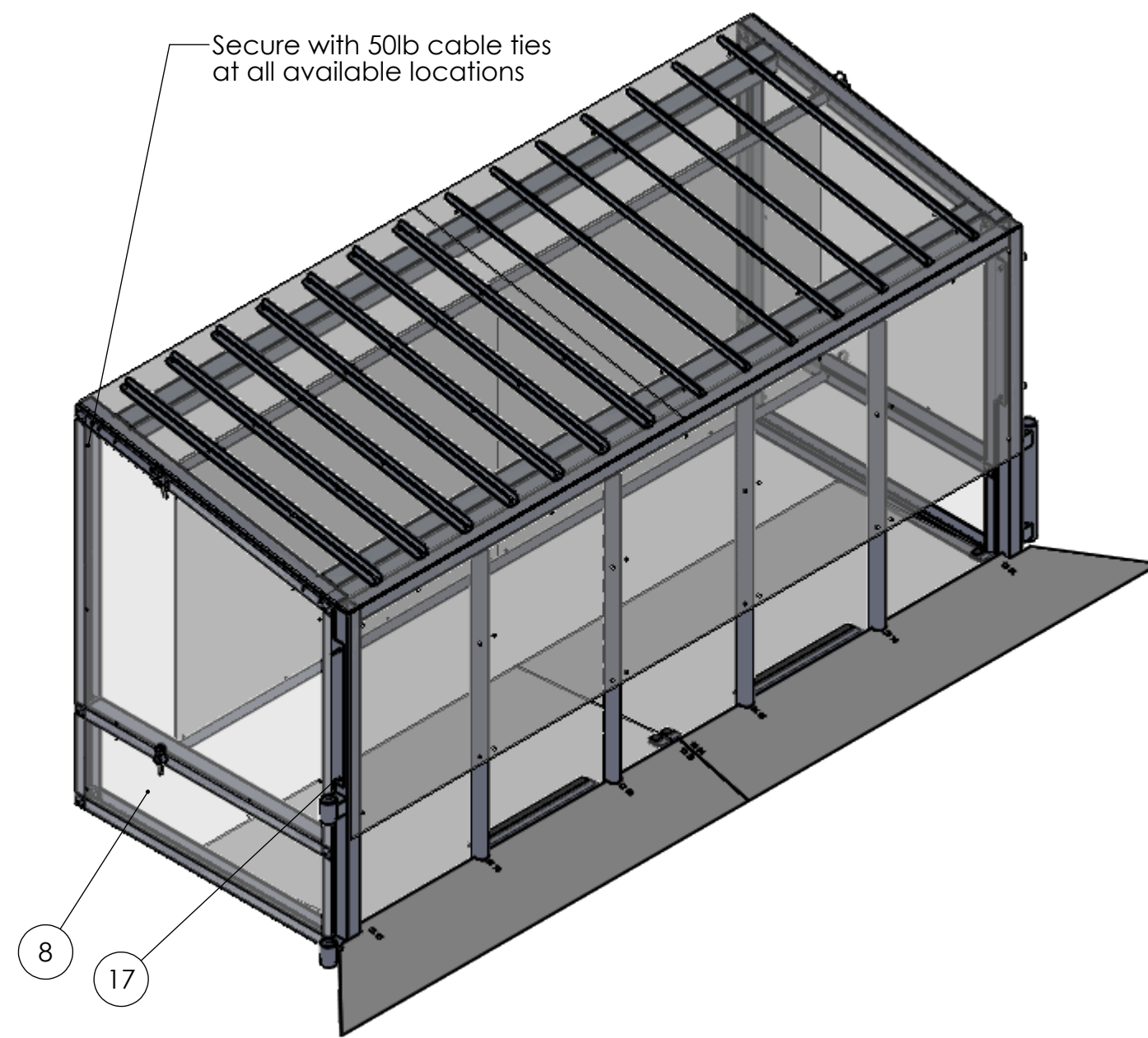
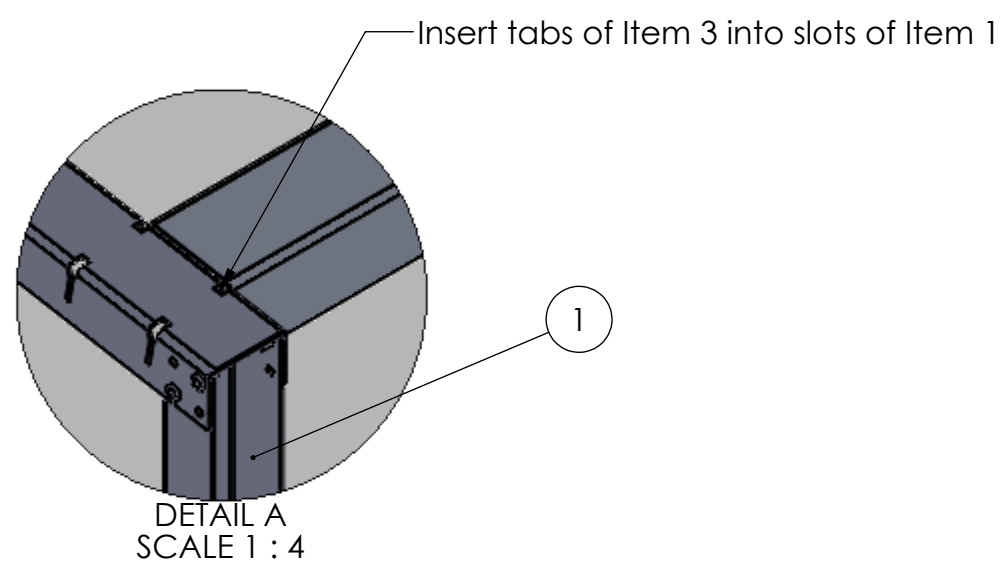
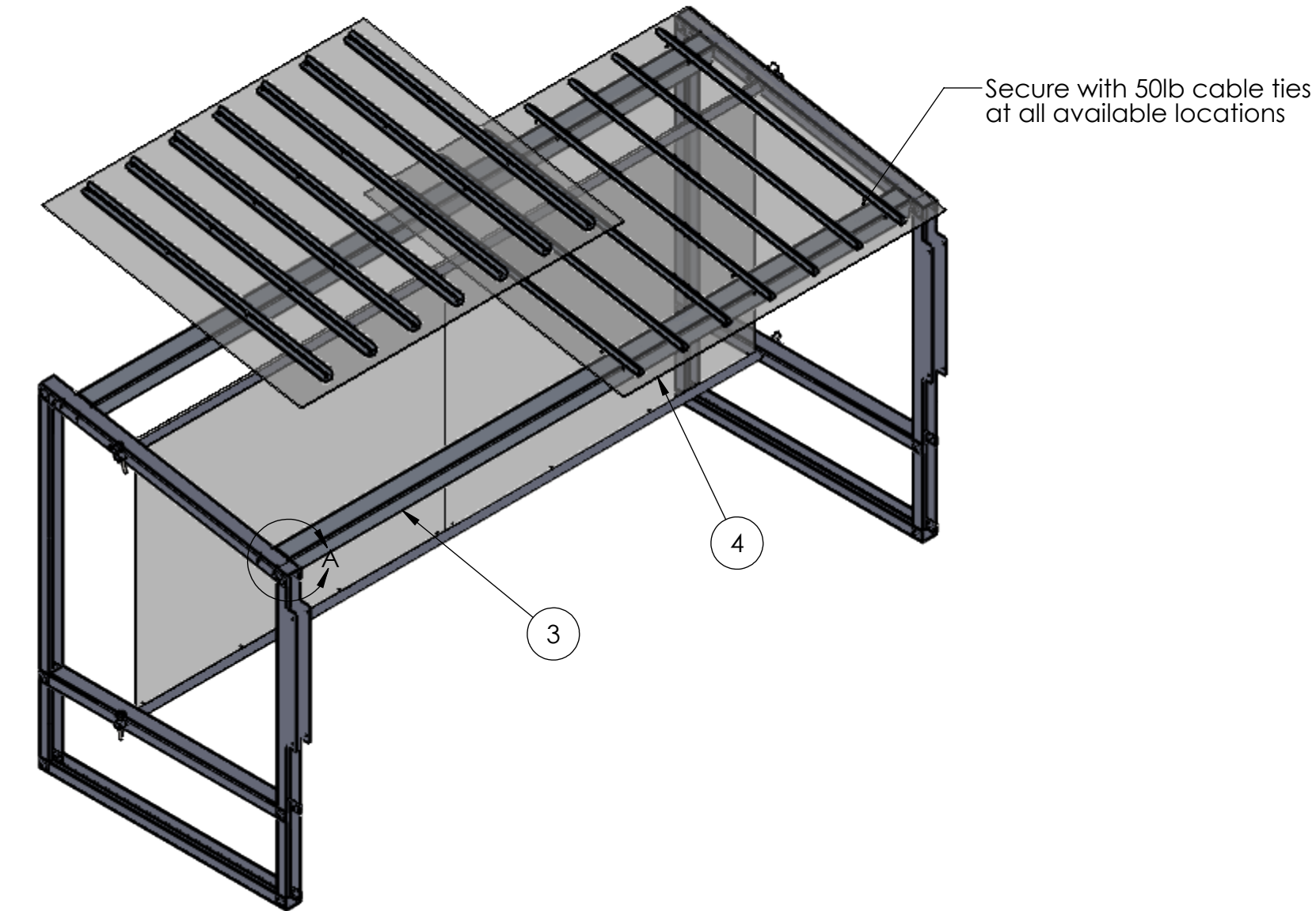
3

2

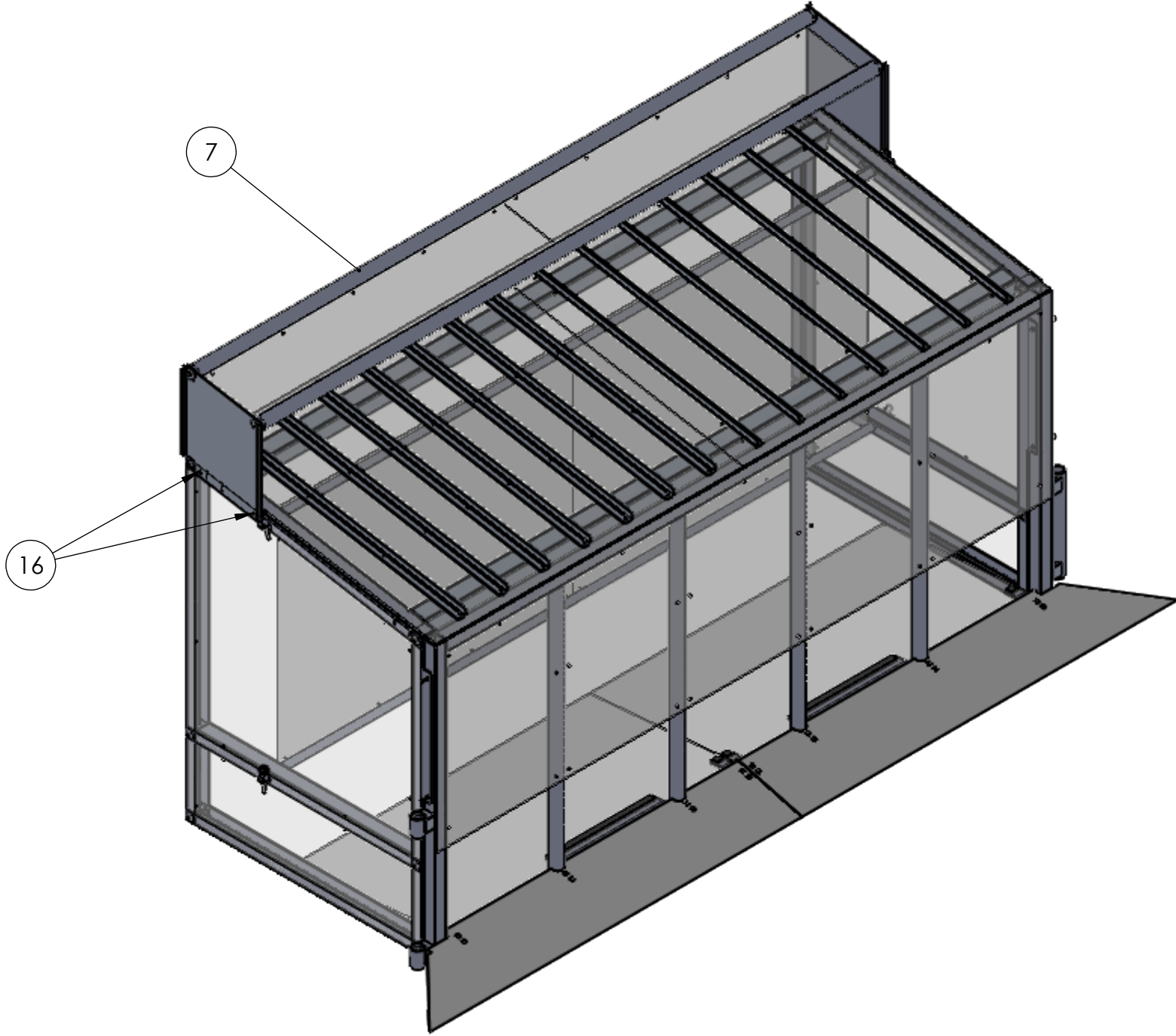
1

A

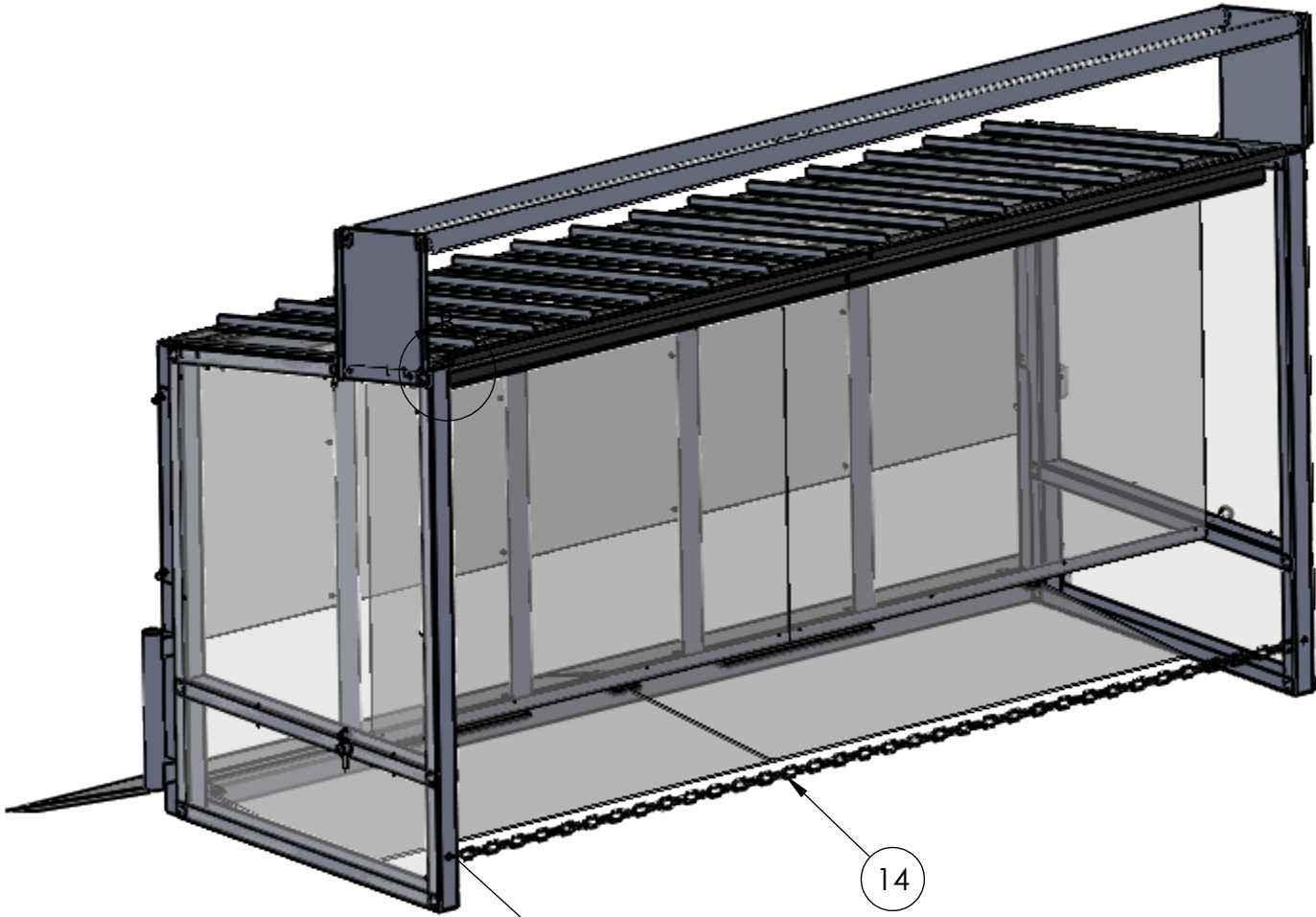
A



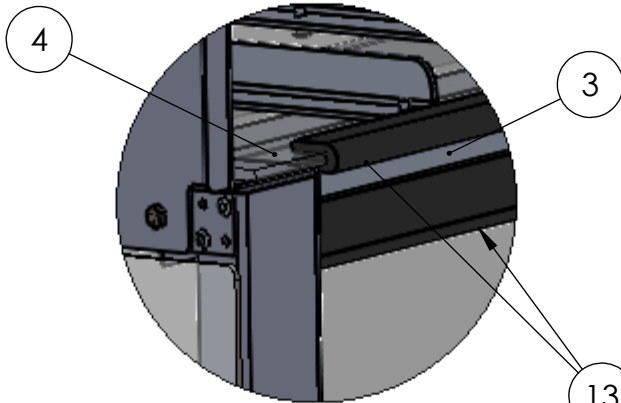
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	DRAWN	DF	1/2/2022			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			Terminal Assembly		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22000	
				SCALE: 1:16		SHEET 3 OF 5



Attach Item 7 using Item 16



Secure using 50lb cable ties



DETAIL B
SCALE 1 : 4

Attach Item 13 to the edges of Item 3 and 4 that are closest to the human player.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	TITLE: <div>Terminal Assembly</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .50	DRAWN	DF	1/2/2022			
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL			SIZE	DWG. NO.	REV
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
DO NOT SCALE DRAWING	COMMENTS:			C	GE-22000	
	REMOVE ALL BURRS AND SHARP EDGES.					
				SCALE: 1:16		SHEET 4 OF 5

4

3

2

1

D

D

C

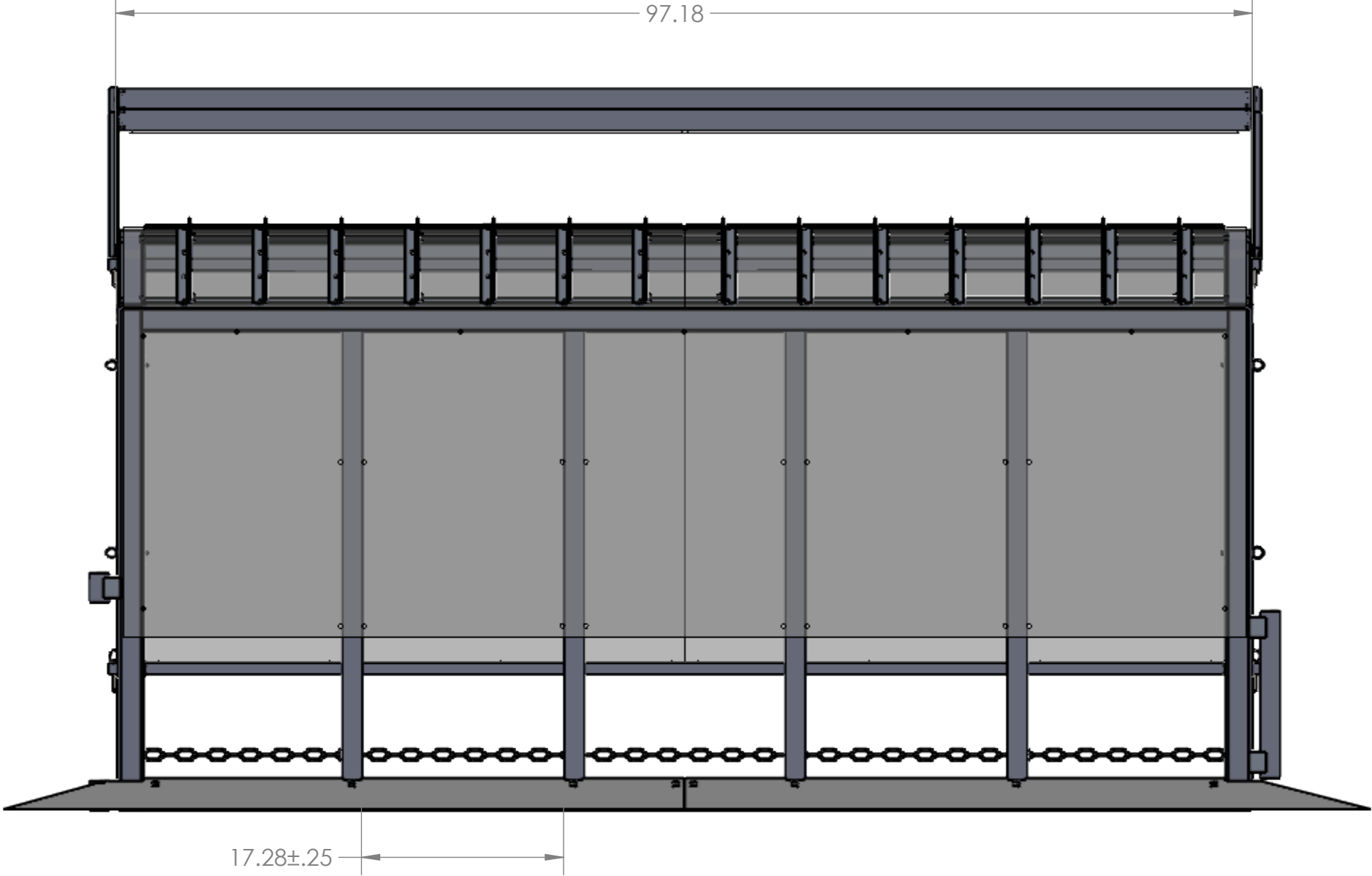
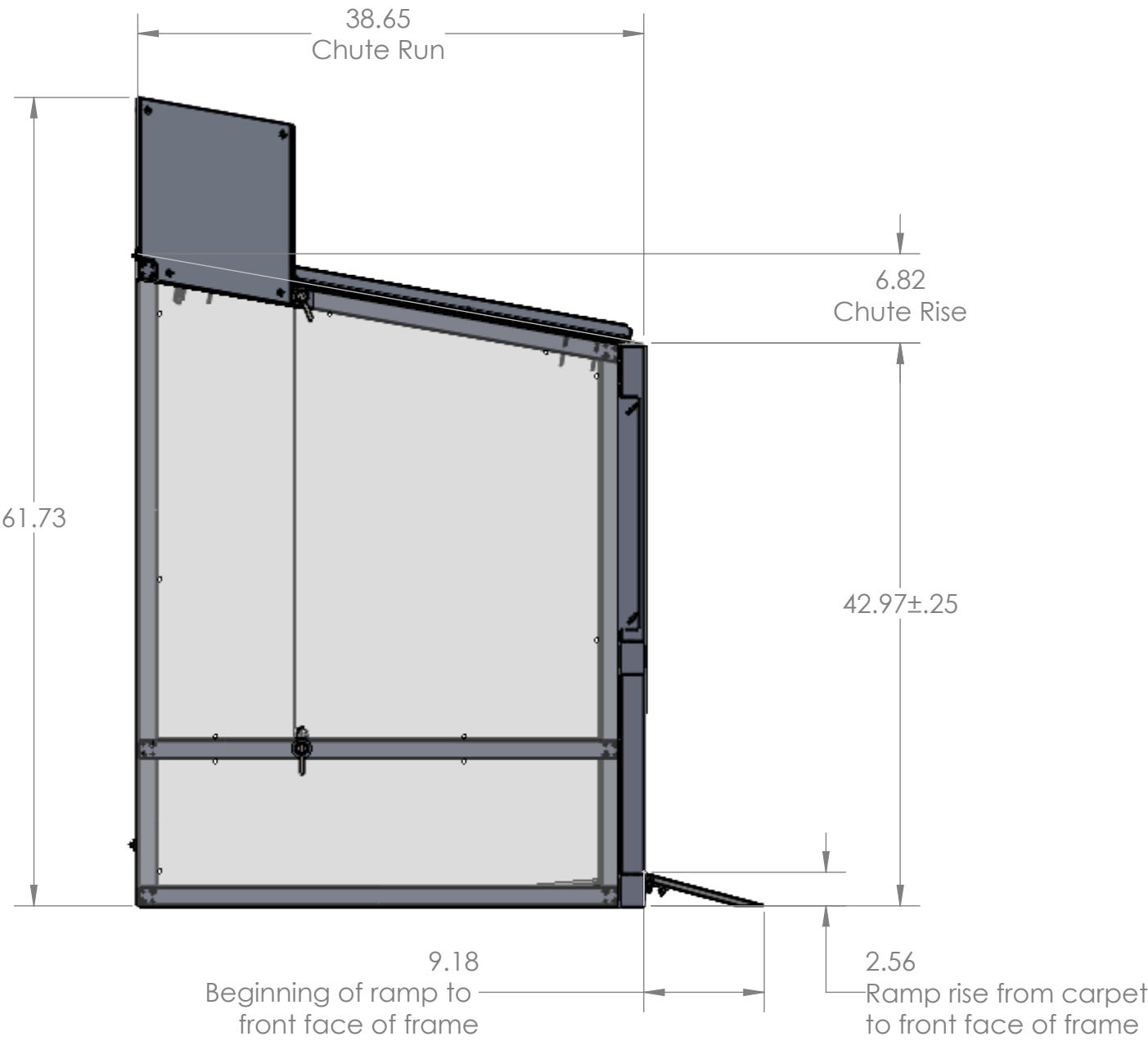
C

B

B

A

A



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/2
ANGULAR: MACH ± 1° BEND ± 1°
TWO PLACE DECIMAL ± .50

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

DF

1/2/2022

PROPRIETARY AND CONFIDENTIAL

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WHOLE WITHOUT THE WRITTEN
PERMISSION OF **FIRST®** IS
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.

TITLE:

Terminal
Assembly

SIZE

C

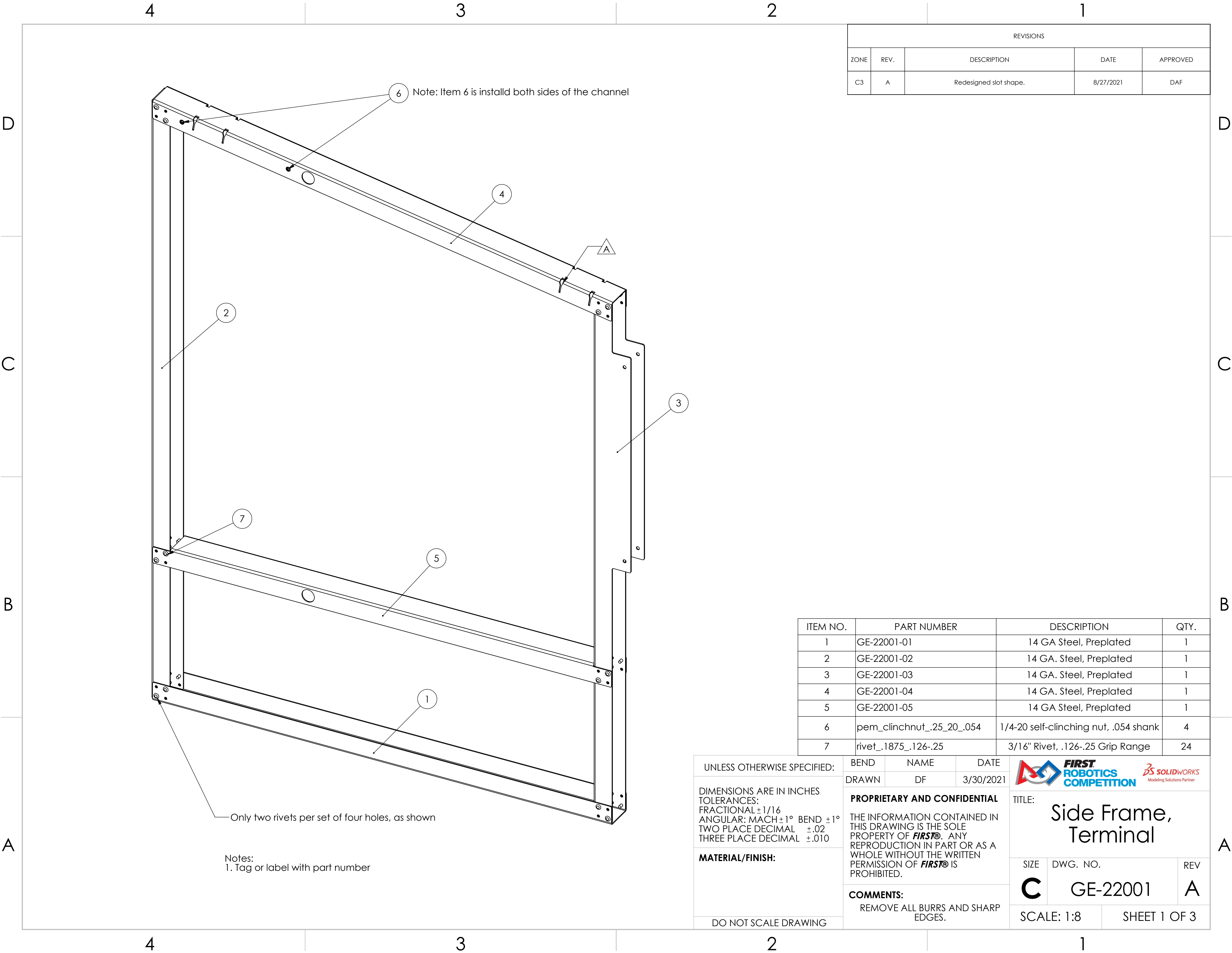
DWG. NO.

GE-22000

REV

SCALE: 1:24

SHEET 5 OF 5



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	Redesigned slot shape.	8/27/2021	DAF

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22001-01	14 GA Steel, Preplated	1
2	GE-22001-02	14 GA. Steel, Preplated	1
3	GE-22001-03	14 GA. Steel, Preplated	1
4	GE-22001-04	14 GA. Steel, Preplated	1
5	GE-22001-05	14 GA Steel, Preplated	1
6	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4
7	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	24

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:



DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	DF	3/30/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

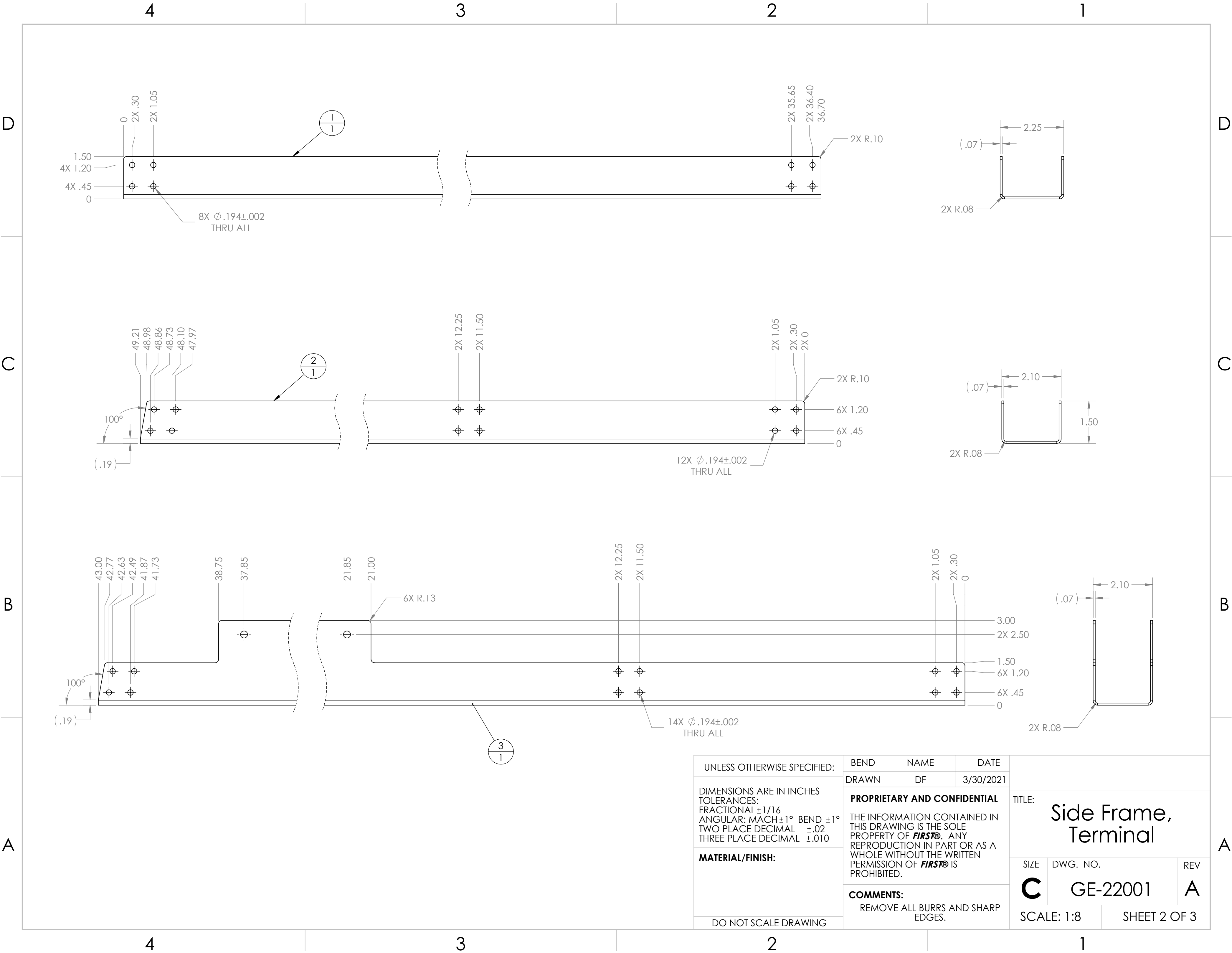


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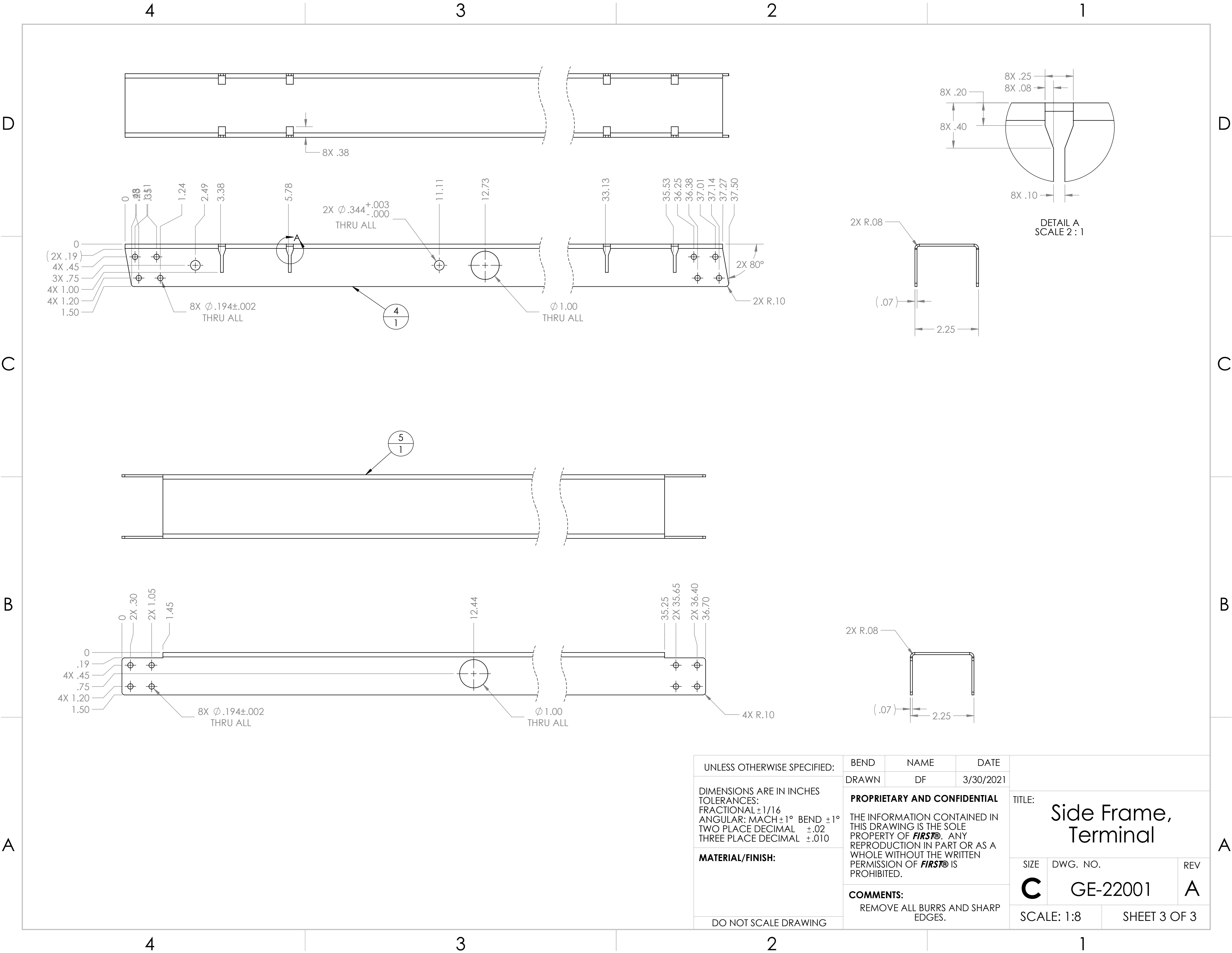
Side Frame,
Terminal

SIZE	DWG. NO.	REV
C	GE-22001	A

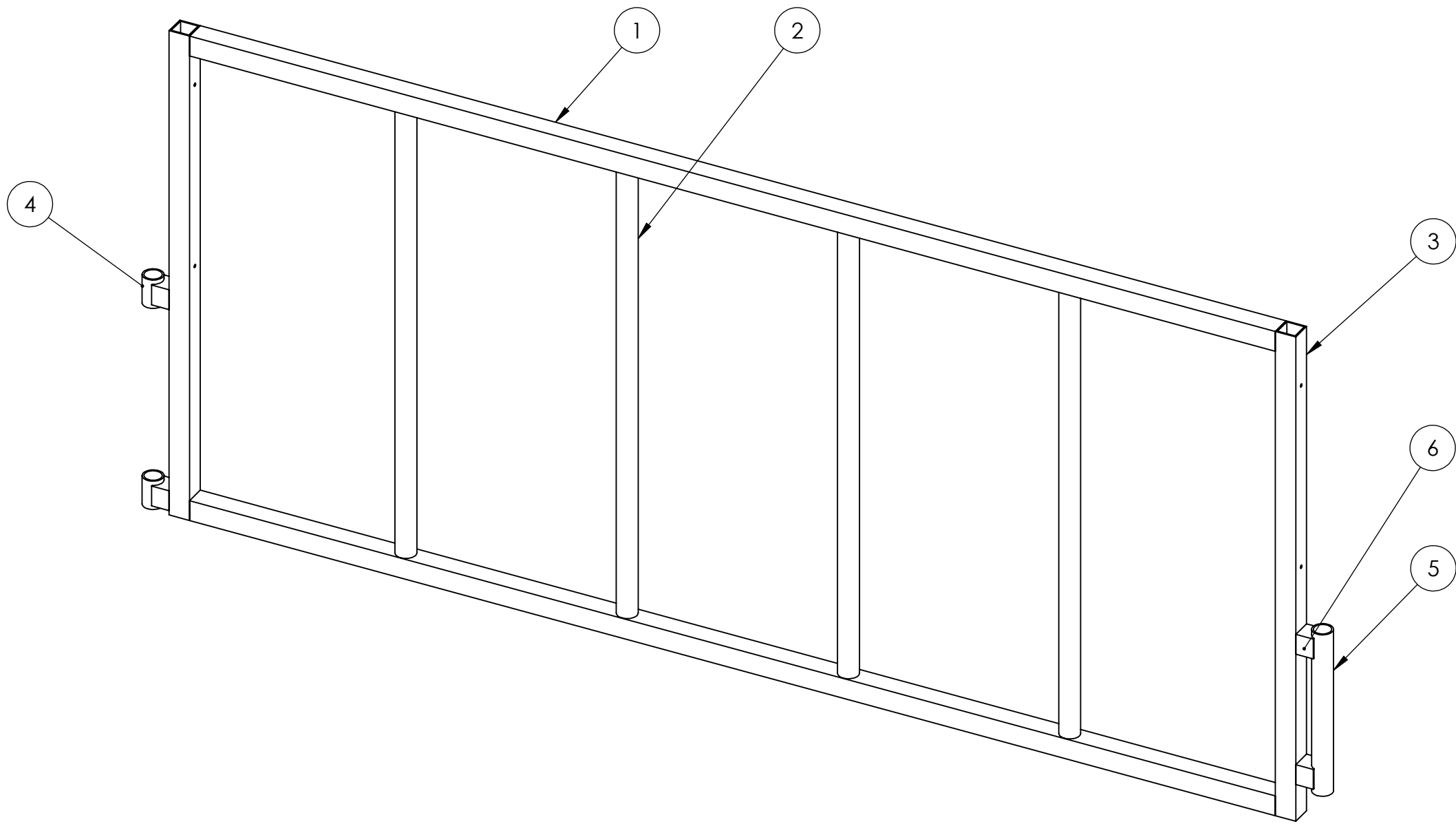
SCALE: 1:8	SHEET 1 OF 3
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: DO NOT SCALE DRAWING	BEND	NAME	DATE	TITLE: Side Frame, Terminal		
	DRAWN	DF	3/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
			C	GE-22001	A	
			SCALE: 1:8		SHEET 2 OF 3	



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: DO NOT SCALE DRAWING	BEND	NAME	DATE	TITLE: Side Frame, Terminal		
	DRAWN	DF	3/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22001	REV A
			SCALE: 1:8		SHEET 3 OF 3	



Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22002-01	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
2	GE-22002-02	1-1/4" Schedule 40 Pipe, 6061 Aluminum	4
3	GE-22002-03	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
4	GE-22002-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
5	GE-22002-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1
6	GE-22002-06	1.75" x .125" thk. Square Tube, 6061 Aluminum	4

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

WELD

DRAWN

NAME

DF

DATE



5/21/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:

Front Frame, Terminal

SIZE

DWG. NO.

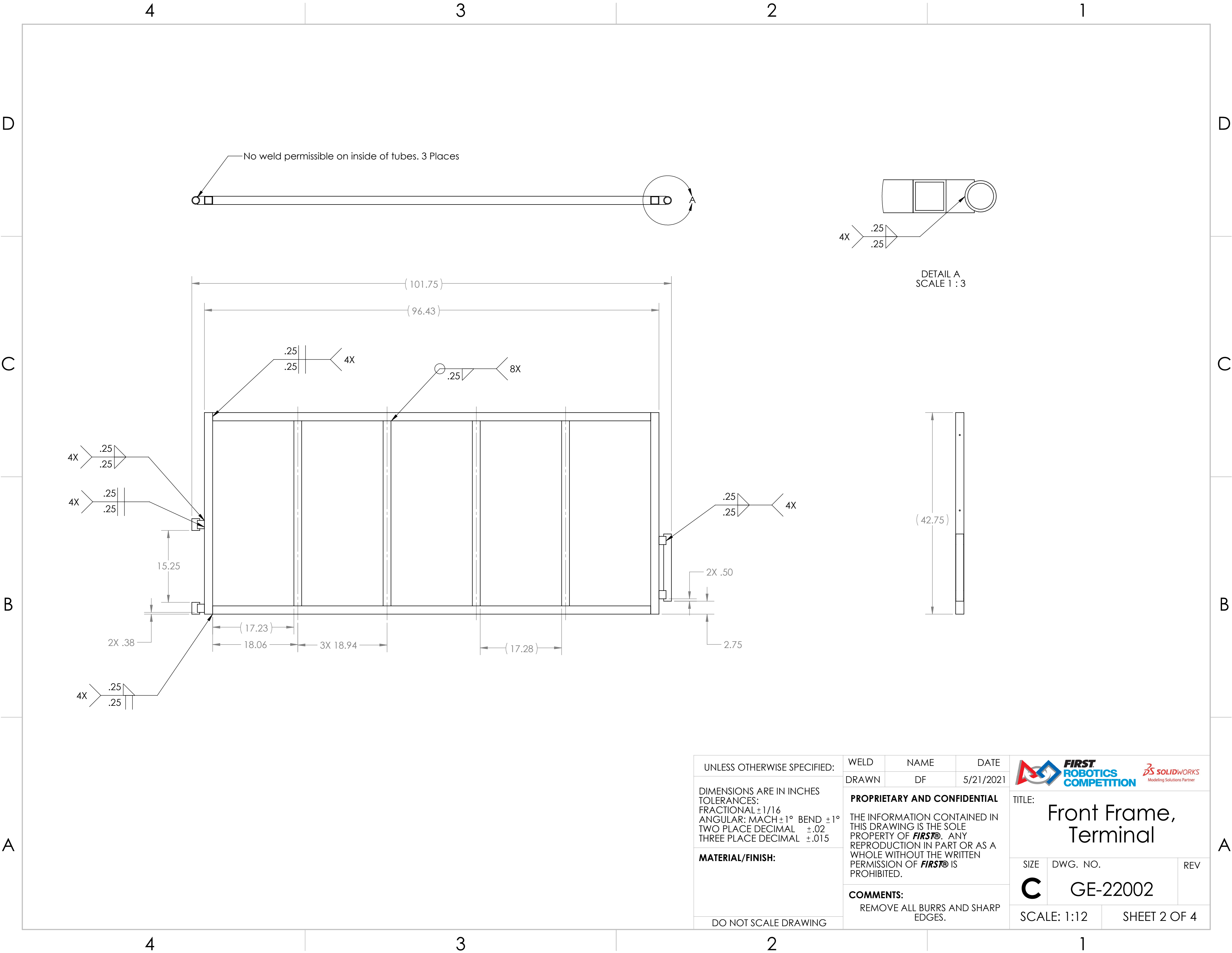
REV

C

GE-22002

SCALE: 1:10

SHEET 1 OF 4



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

WELD

DRAWN

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

NAME

DF

DATE

5/21/2021



FIRST
ROBOTICS
COMPETITION



Modeling Solutions Partner

TITLE:

Front Frame,
Terminal

SIZE

C

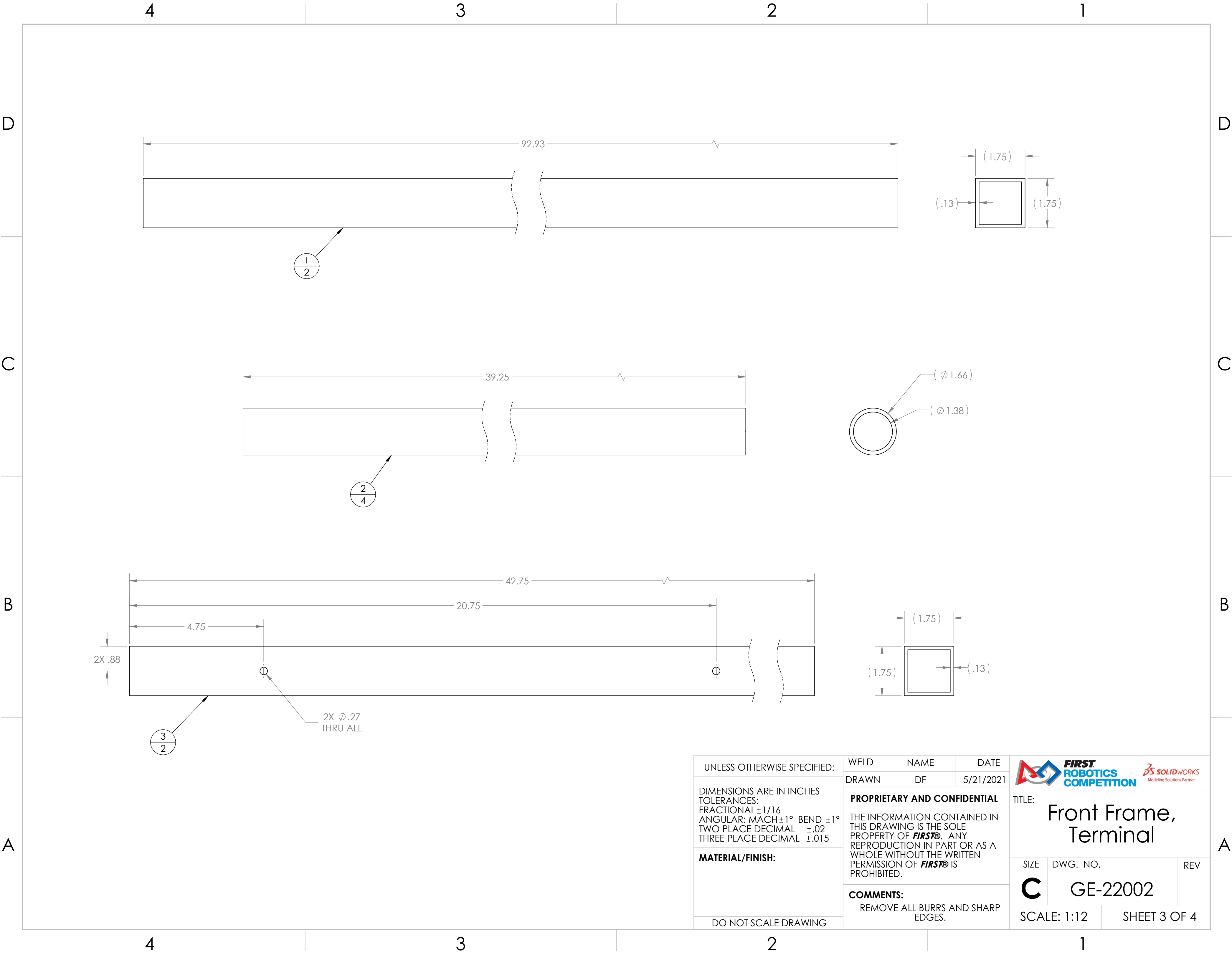
DWG. NO.

GE-22002

REV

SCALE: 1:12

SHEET 2 OF 4



4

3

2

1

D

D

C



C

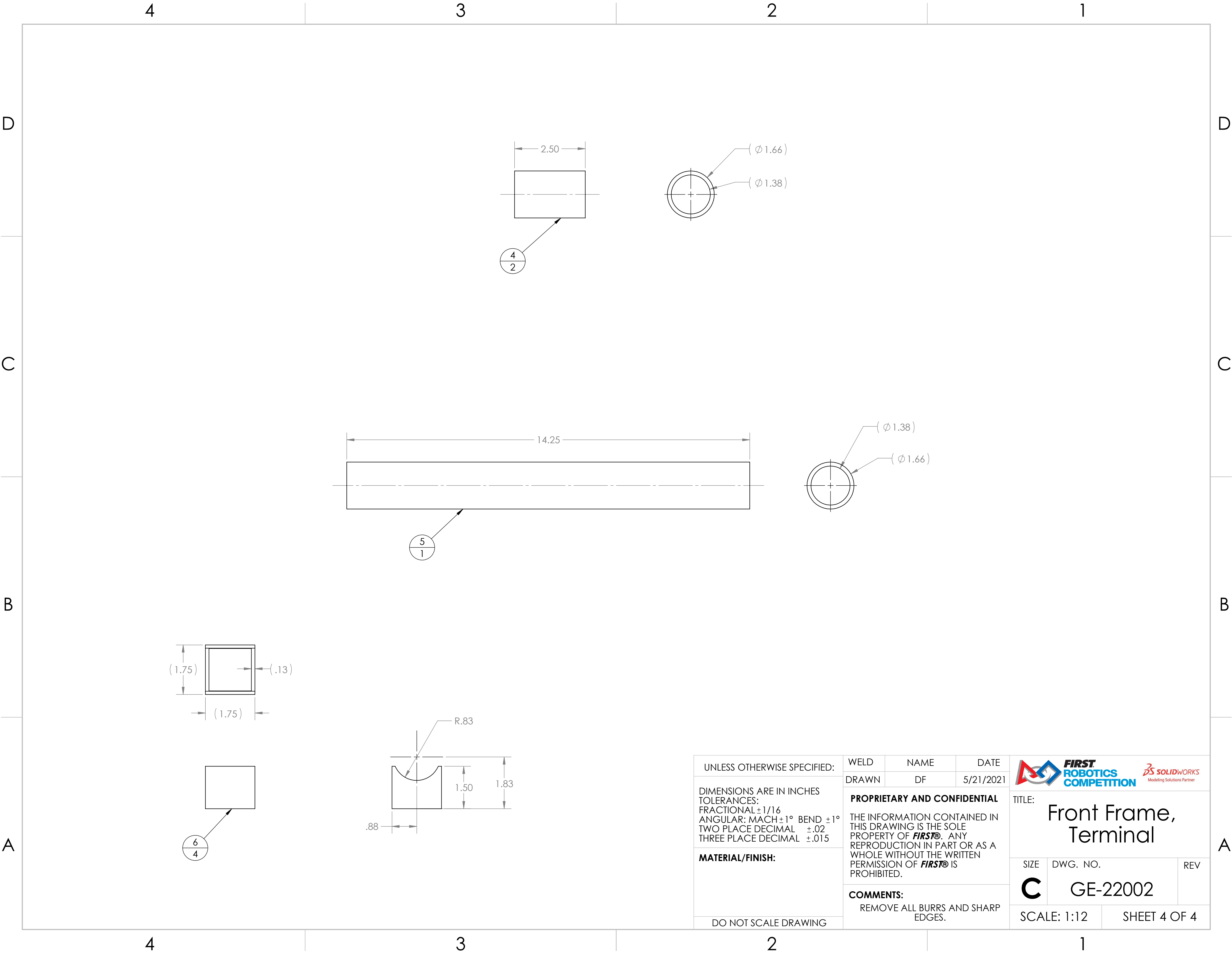
B

B

A

A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015 MATERIAL/FINISH: DO NOT SCALE DRAWING	WELD	NAME	DATE	<div></div> <div>TITLE: Front Frame, Terminal</div>		
	DRAWN	DF	5/21/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22002	
				SCALE: 1:12		SHEET 3 OF 4



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

WELD

DRAWN

NAME

DF

DATE

5/21/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE:

Front Frame,
Terminal

SIZE

C

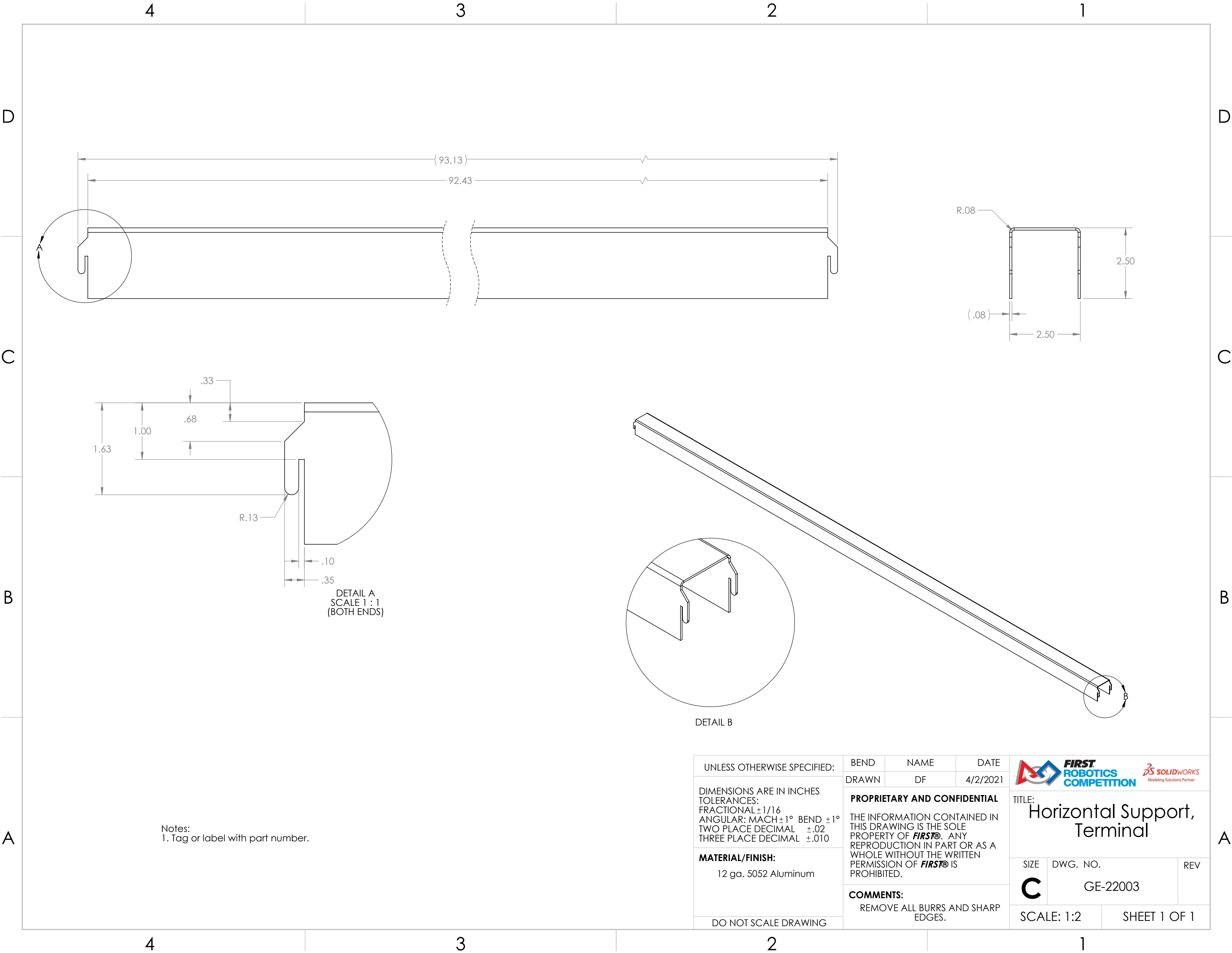
DWG. NO.

GE-22002



REV

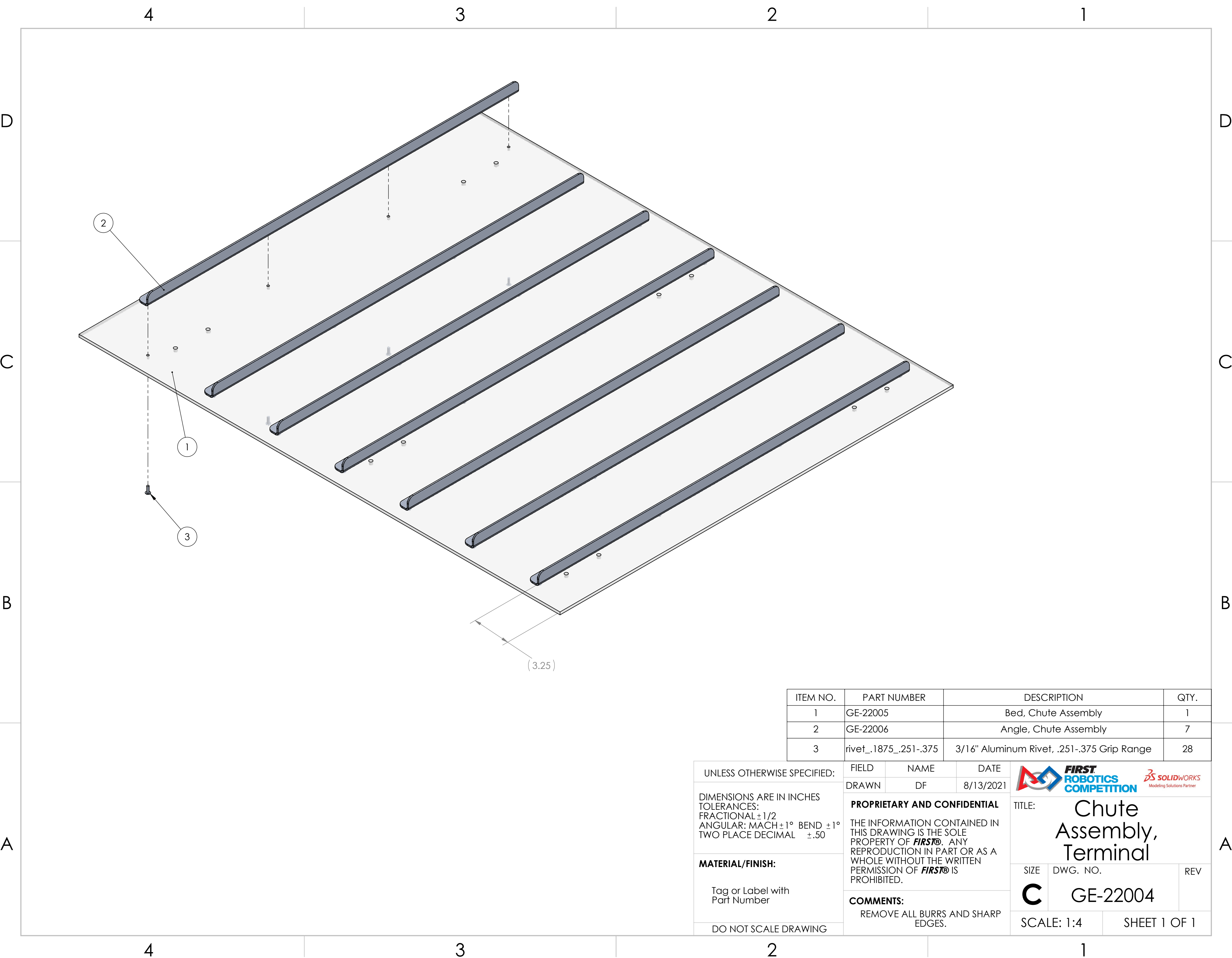
SCALE: 1:12

SHEET 4 OF 4





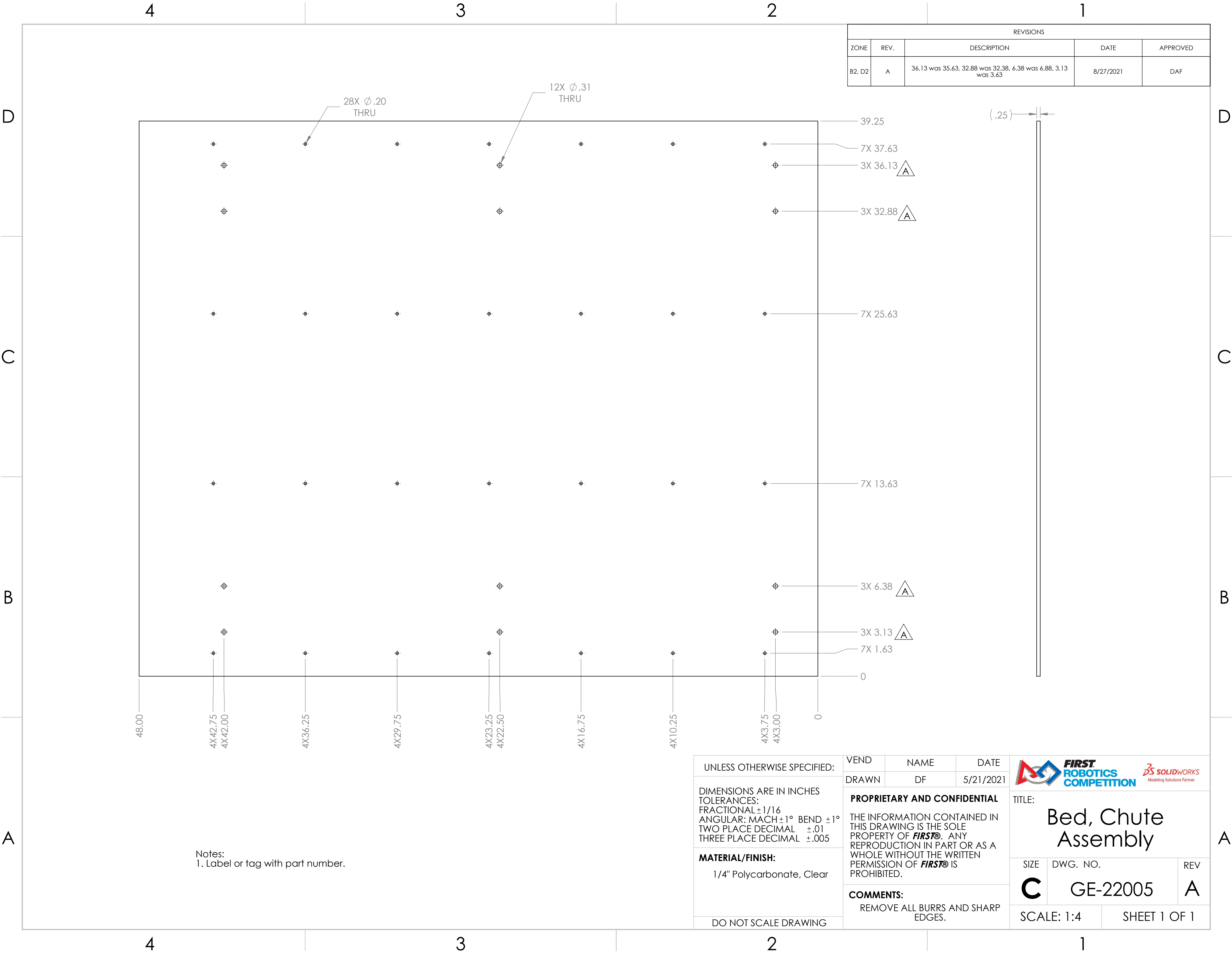
Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 12 ga. 5052 Aluminum DO NOT SCALE DRAWING	BEND DRAWN	NAME DF	DATE 4/2/2021	<div></div> <div>TITLE: Horizontal Support, Terminal</div>		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C	DWG. NO. GE-22003	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:2		
				SHEET 1 OF 1		



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22005	Bed, Chute Assembly	1
2	GE-22006	Angle, Chute Assembly	7
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	28

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	DF	8/13/2021	TITLE: Chute Assembly, Terminal	
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C	
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO. GE-22004	
MATERIAL/FINISH: Tag or Label with Part Number					REV	
DO NOT SCALE DRAWING					SCALE: 1:4	
					SHEET 1 OF 1	



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, D2	A	36.13 was 35.63, 32.88 was 32.38, 6.38 was 6.88, 3.13 was 3.63	8/27/2021	DAF

Notes:
1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/4" Polycarbonate, Clear



DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	DF	5/21/2021

PROPRIETARY AND CONFIDENTIAL

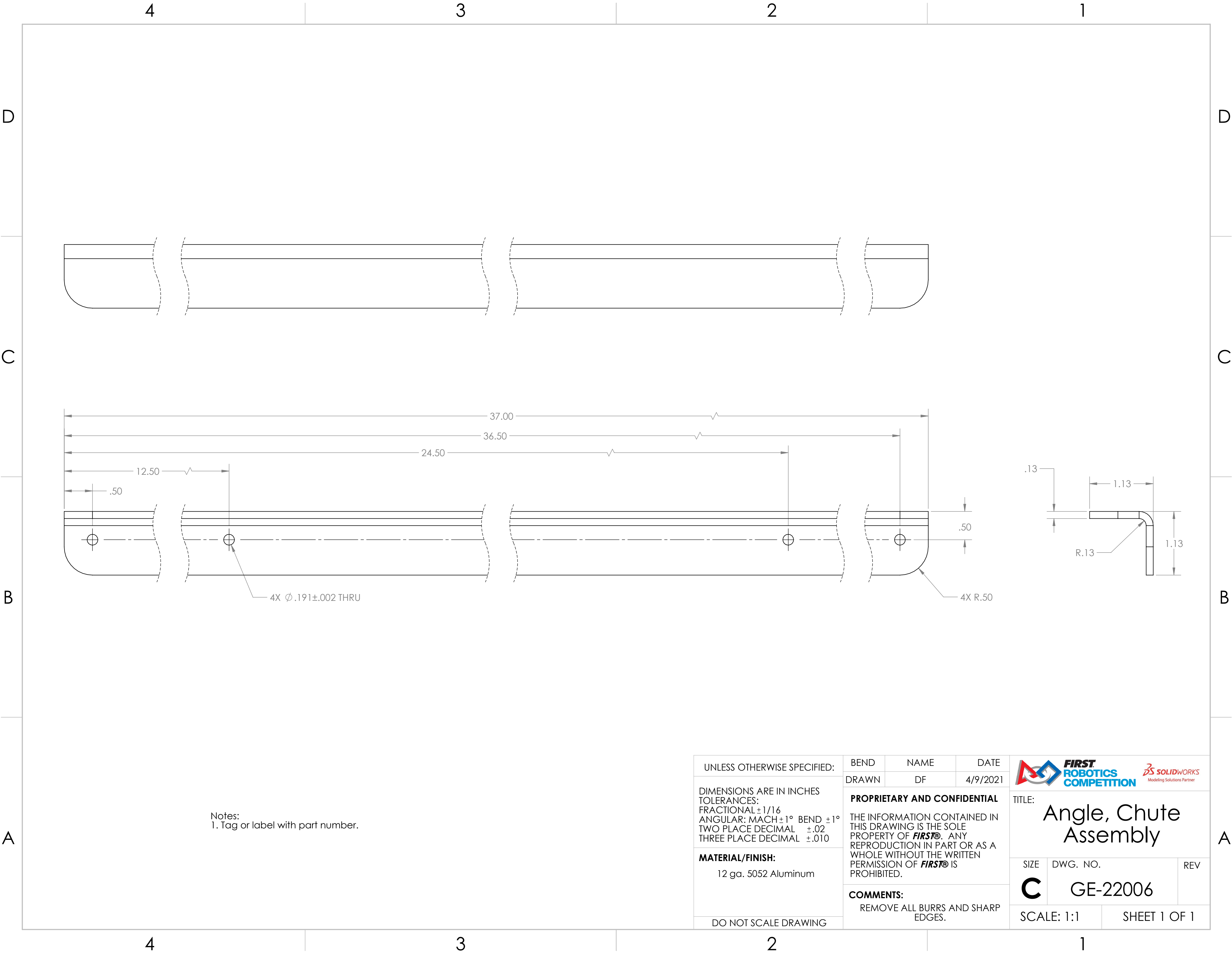
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.





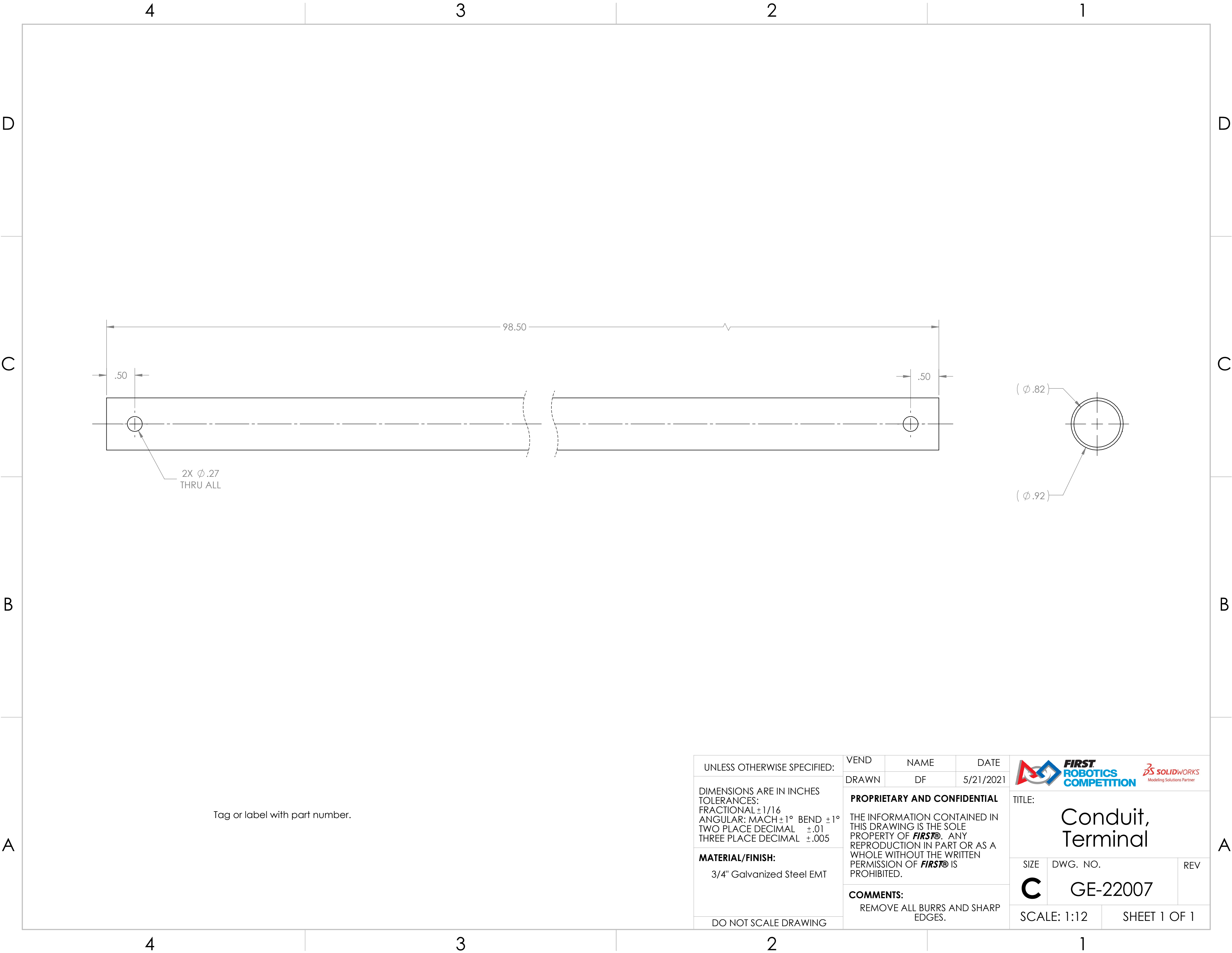
TITLE:
Bed, Chute Assembly

SIZE C	DWG. NO. GE-22005	REV A
SCALE: 1:4		SHEET 1 OF 1





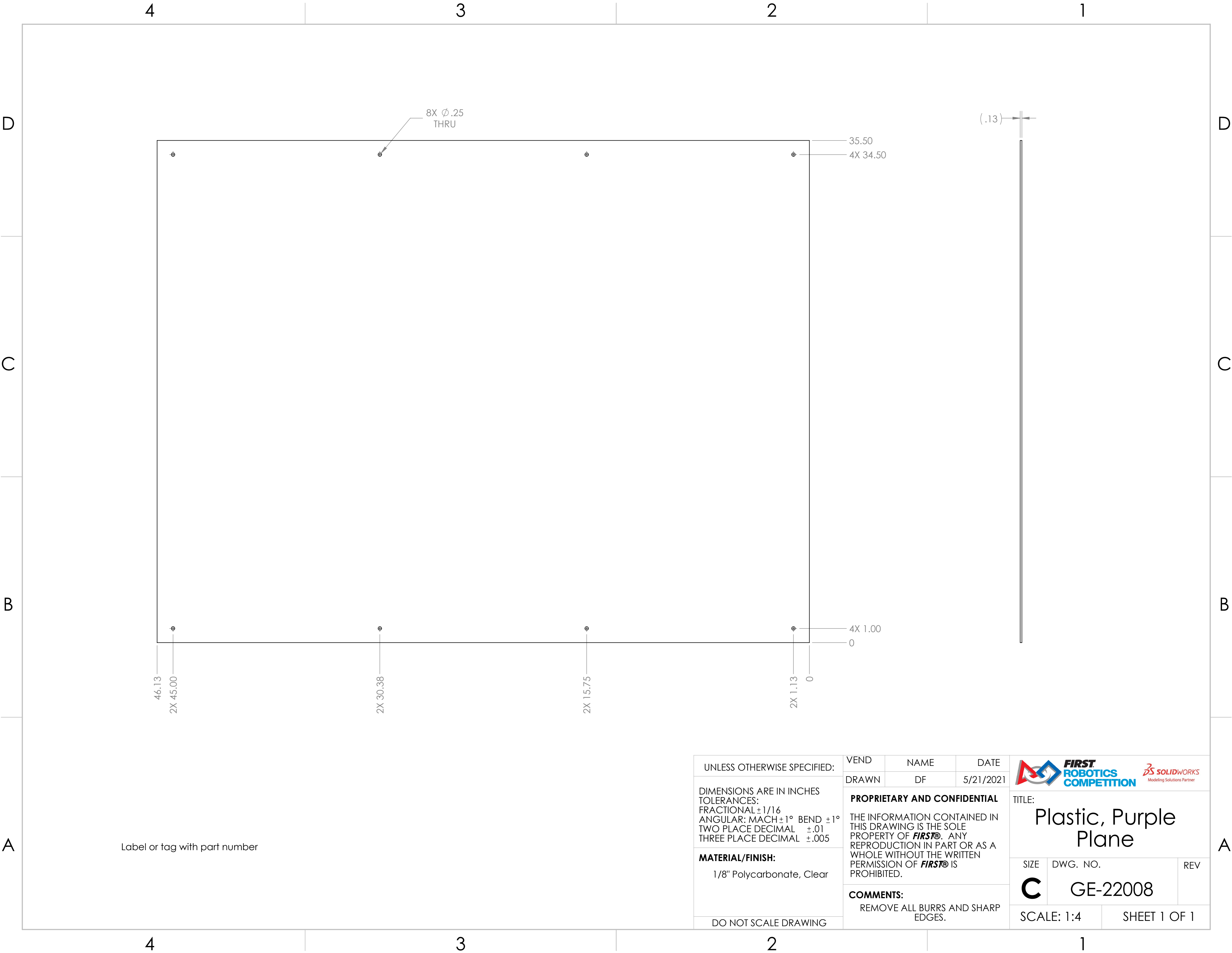
Notes:
1. Tag or label with part number.



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 12 ga. 5052 Aluminum DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: Angle, Chute Assembly</div>		
	DRAWN	DF	4/9/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22006	
				SCALE: 1:1		SHEET 1 OF 1

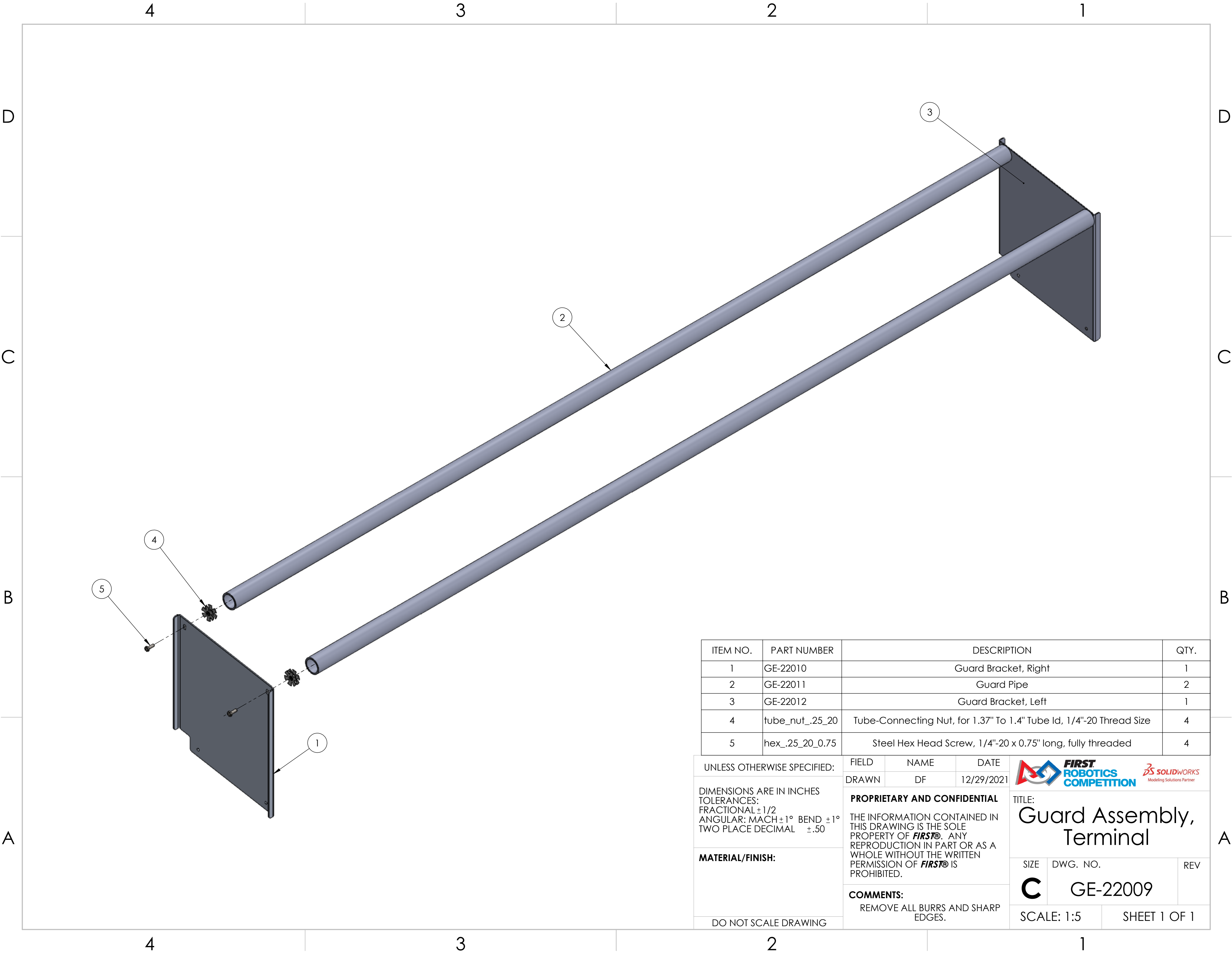


Tag or label with part number.



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	DF	5/21/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Conduit, Terminal		
	MATERIAL/FINISH: 3/4" Galvanized Steel EMT			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22007	
				SCALE: 1:12		SHEET 1 OF 1

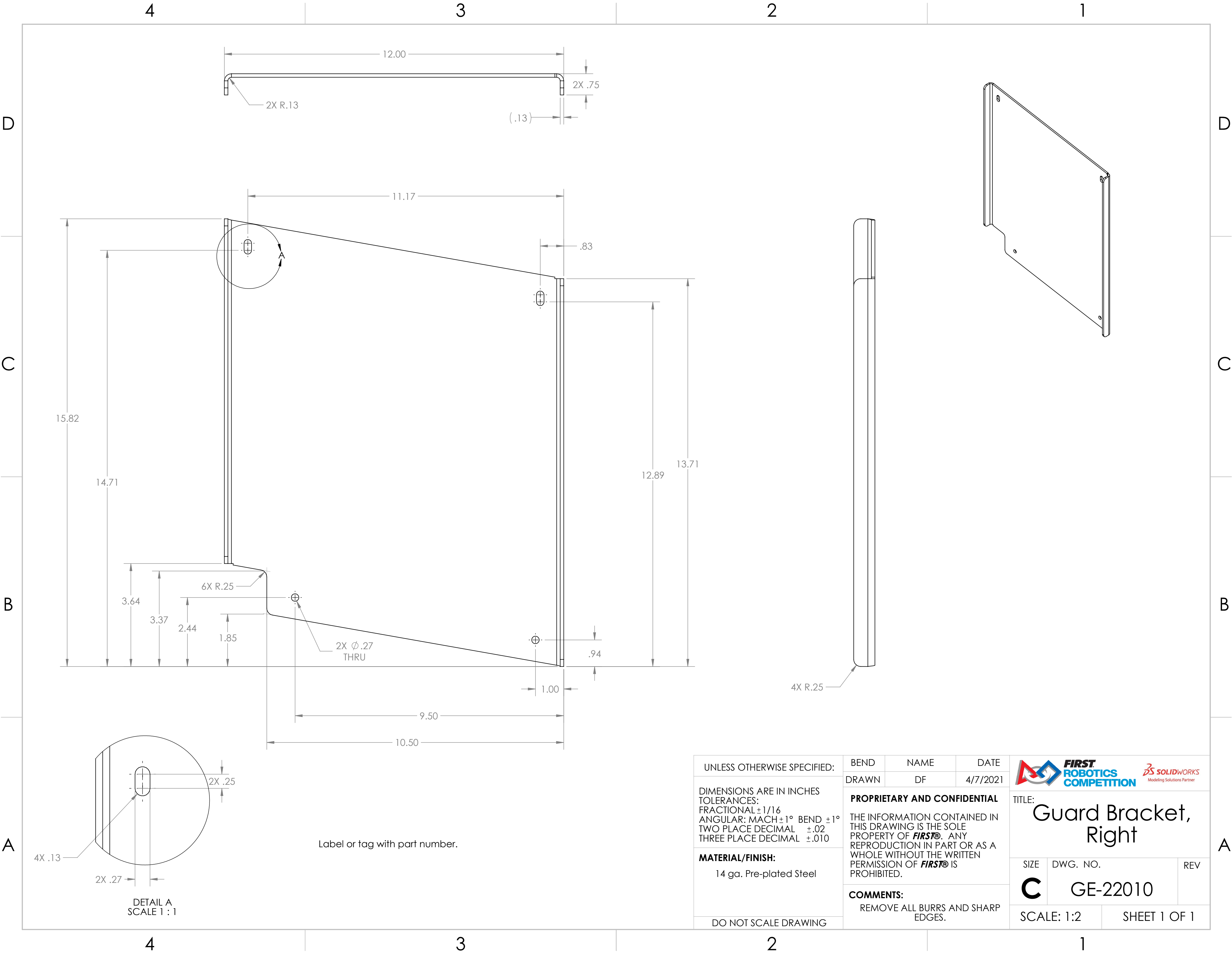




UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 1/8" Polycarbonate, Clear DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Plastic, Purple Plane</h1></div>		
	DRAWN	DF	5/21/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
		SIZE	DWG. NO.	REV		
		C	GE-22008			
		SCALE: 1:4		SHEET 1 OF 1		



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22010	Guard Bracket, Right	1
2	GE-22011	Guard Pipe	2
3	GE-22012	Guard Bracket, Left	1
4	tube_nut_.25_20	Tube-Connecting Nut, for 1.37" To 1.4" Tube Id, 1/4"-20 Thread Size	4
5	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	DF	12/29/2021	TITLE: Guard Assembly, Terminal		
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE C	
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				DWG. NO. GE-22009	
MATERIAL/FINISH:					REV		
DO NOT SCALE DRAWING					SCALE: 1:5		
					SHEET 1 OF 1		



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div> <div>TITLE: Guard Bracket, Right</div>		
	DRAWN	DF	4/7/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22010	
				SCALE: 1:2		SHEET 1 OF 1
MATERIAL/FINISH: 14 ga. Pre-plated Steel						
DO NOT SCALE DRAWING						

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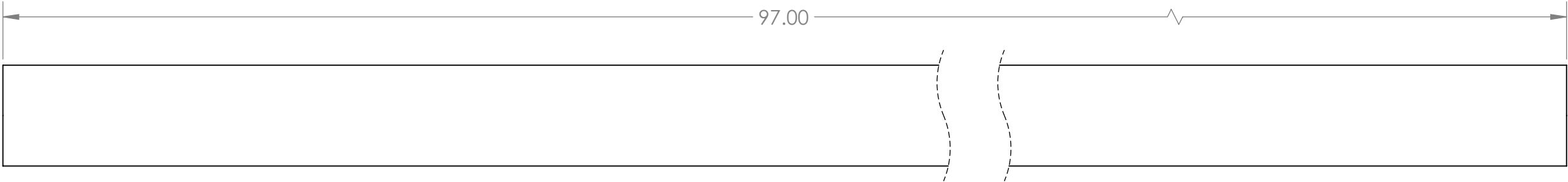
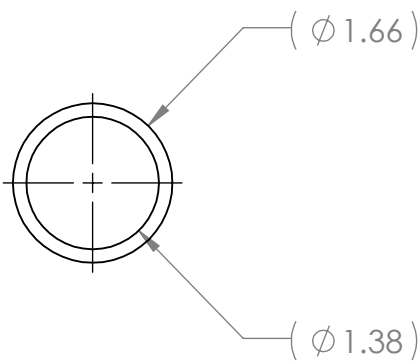
C

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Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1-1/4" Schedule 40 Pipe,
6061 Aluminum

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

DF

8/13/2021

PROPRIETARY AND CONFIDENTIAL

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THIS DRAWING IS THE SOLE
PROPERTY OF **FIRST®**. ANY
REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF **FIRST®** IS
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.



**FIRST
ROBOTICS
COMPETITION**



Modeling Solutions Partner

TITLE:

Guard Pipe

SIZE

C

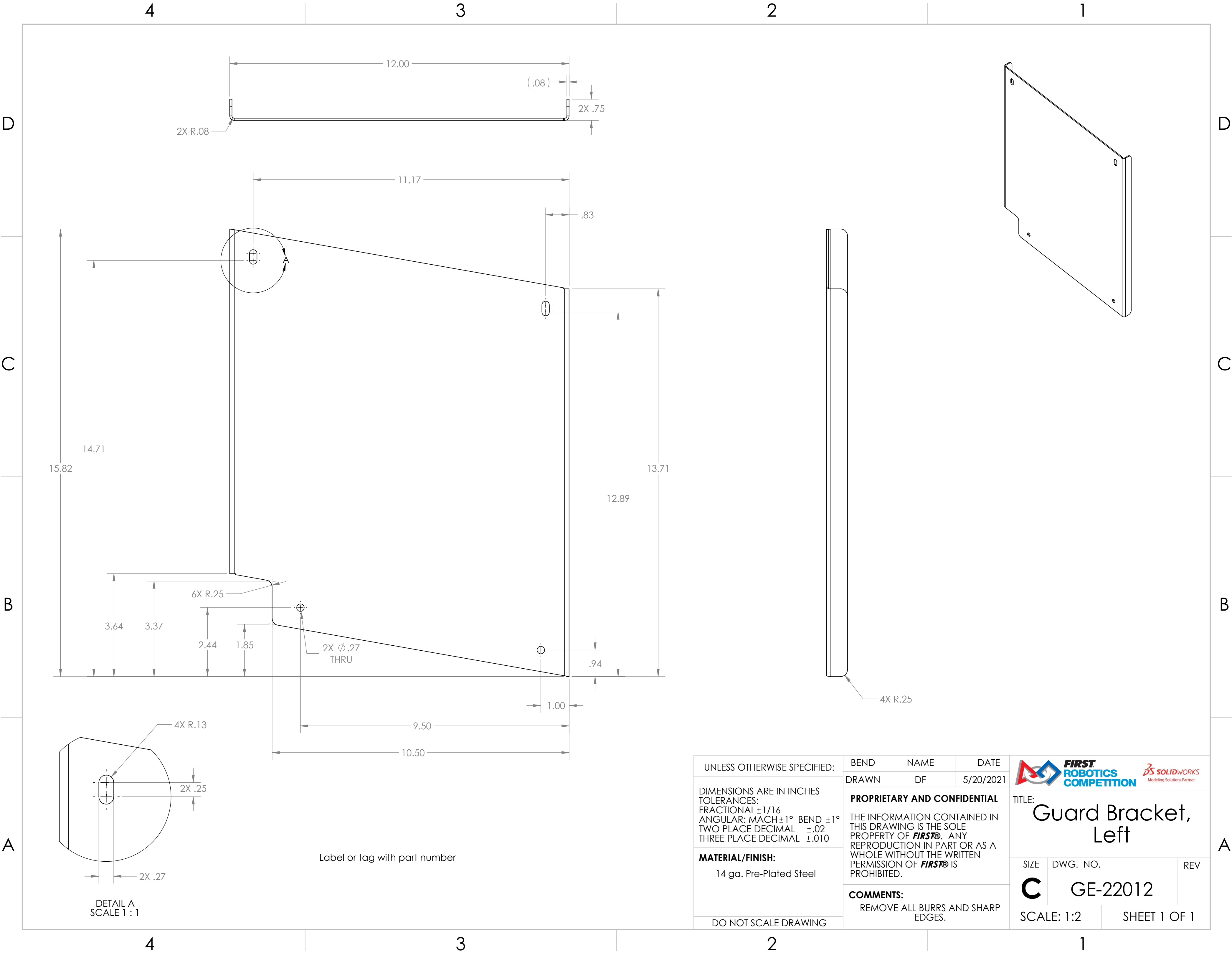
DWG. NO.

GE-22011

REV

SCALE: 1:2

SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:
14 ga. Pre-Plated Steel

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	DF	5/20/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Guard Bracket, Left

SIZE	DWG. NO.	REV
C	GE-22012	

SCALE: 1:2 SHEET 1 OF 1

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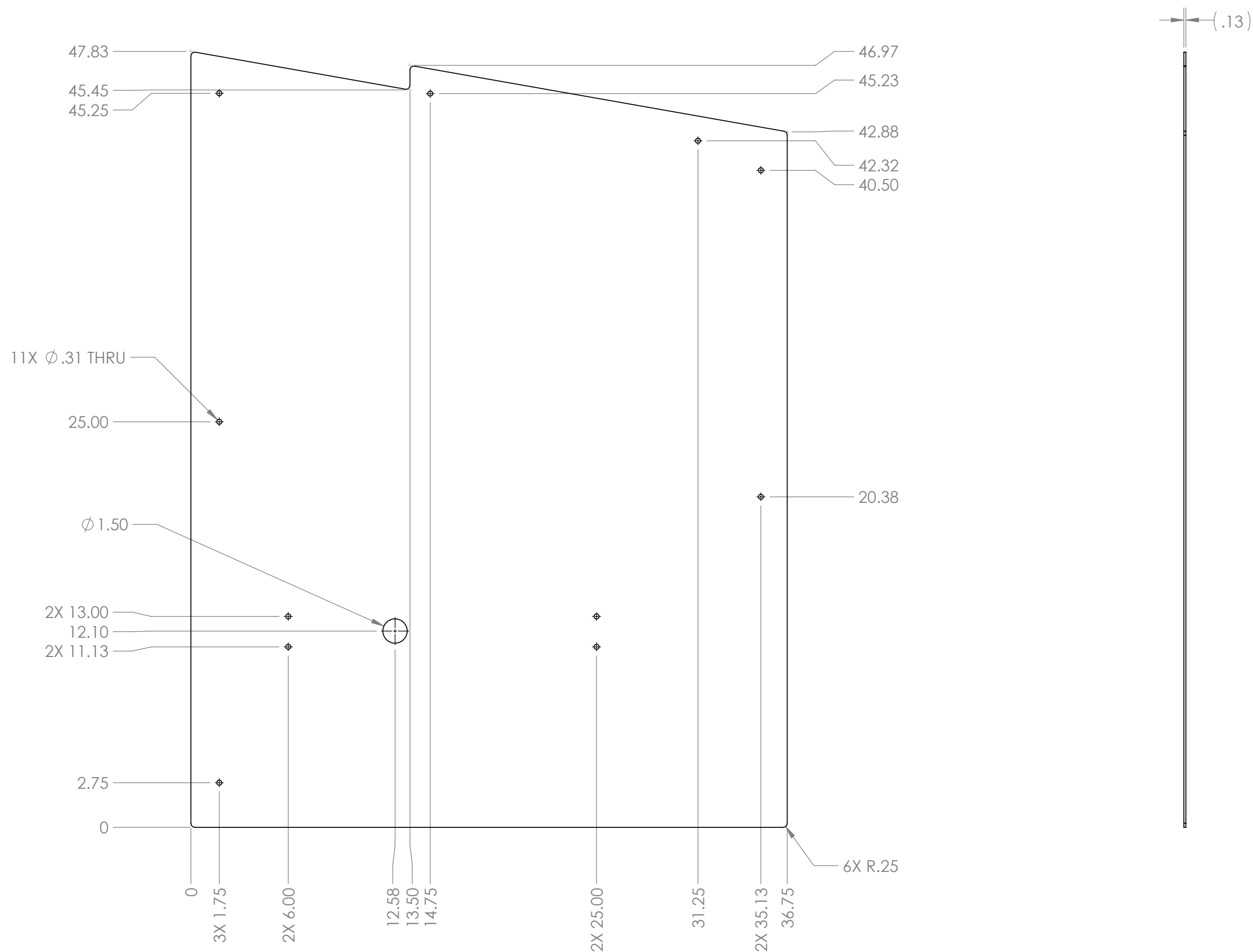
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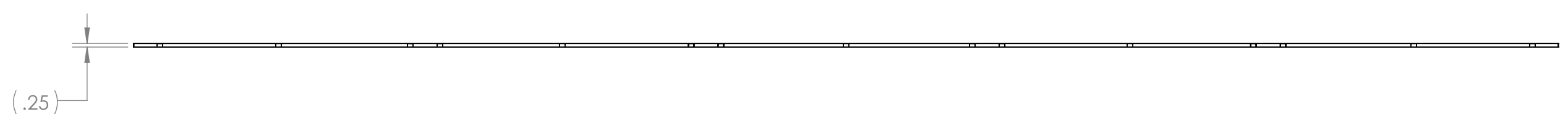
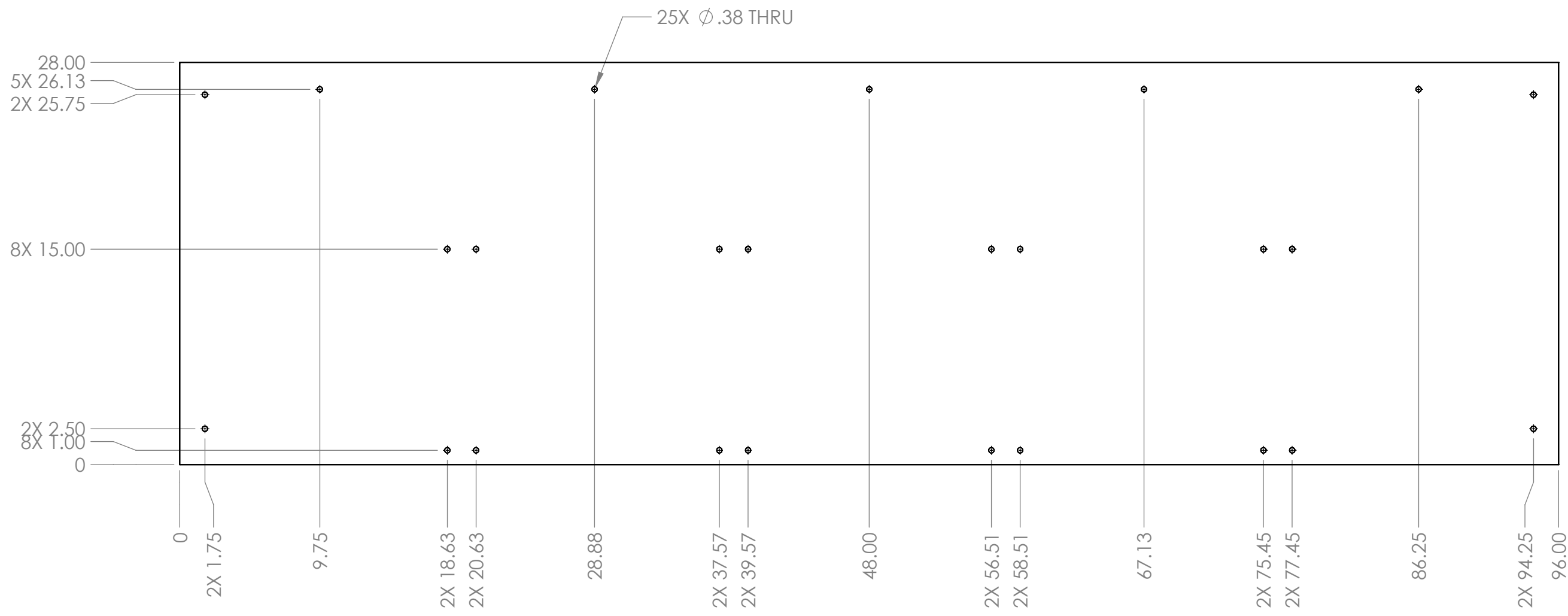
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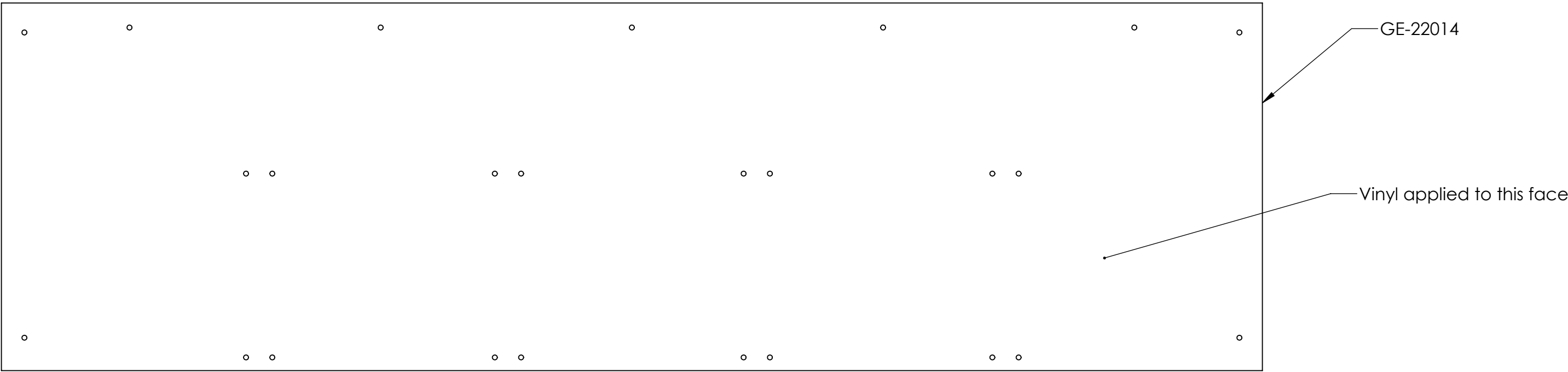
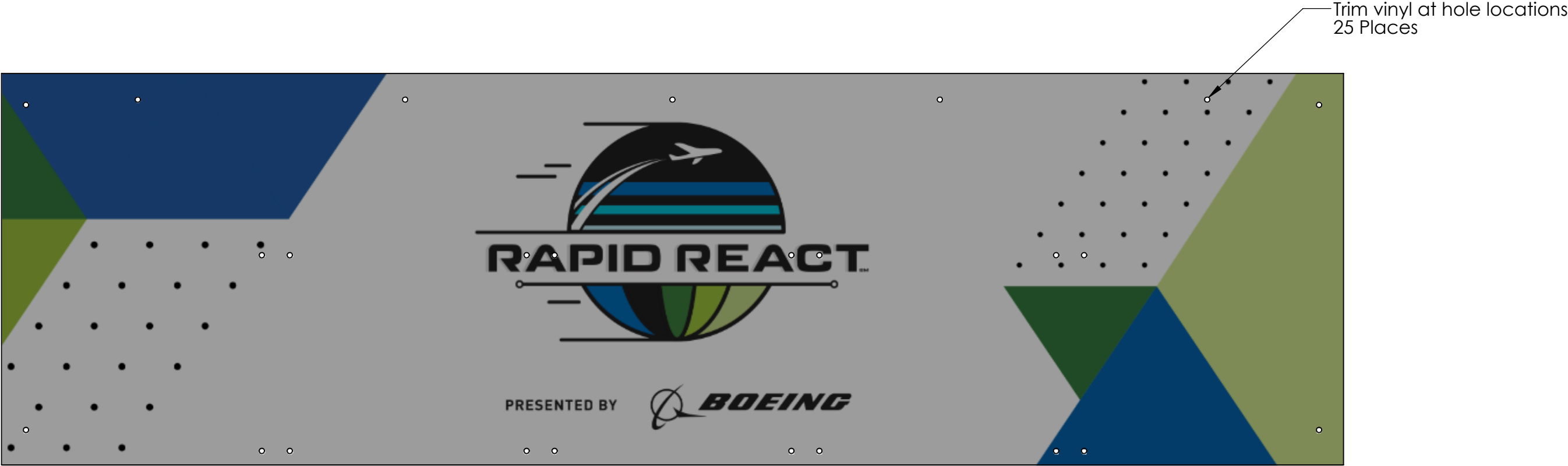
Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:		VEND		NAME		DATE	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$		DRAWN		DF		8/13/2021	
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH: 1/8" Polycarbonate, Clear		 					
DO NOT SCALE DRAWING		TITLE: <h1>Side Plastic, Terminal</h1>					
		SIZE		DWG. NO.		REV	
		C		GE-22013			
		SCALE: 1:6				SHEET 1 OF 1	





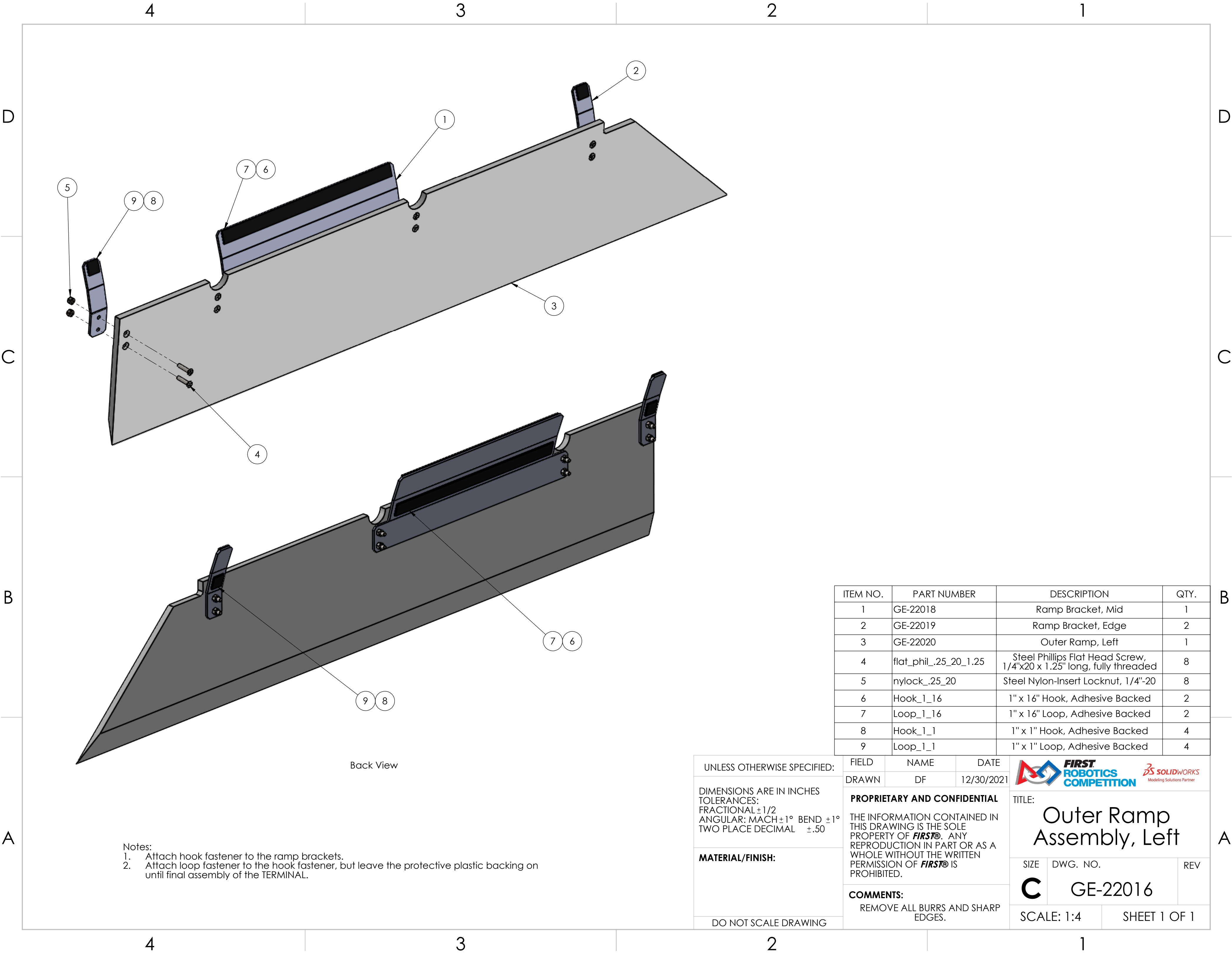
Notes:
1. Tag or label with part number.
2. Part will receive vinyl graphics.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 1/4" Polycarbonate, Clear DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	DF	8/13/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Front Plastic, Terminal	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22014
			SCALE: 1:8		SHEET 1 OF 1



- Notes:
1. Tag or label with part number
 2. Vinyl: 50/50 Mesh with clear protective coating.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE:</div></div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	DRAWN	DF	9/28/2021	<div>Front Plastic with Vinyl</div>		
MATERIAL/FINISH: See note	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING				C	GE-22015	
				SCALE: 1:8		SHEET 1 OF 1



- Notes:
1. Attach hook fastener to the ramp brackets.
 2. Attach loop fastener to the hook fastener, but leave the protective plastic backing on until final assembly of the TERMINAL.

Back View

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22018	Ramp Bracket, Mid	1
2	GE-22019	Ramp Bracket, Edge	2
3	GE-22020	Outer Ramp, Left	1
4	flat_phil_.25_20_1.25	Steel Phillips Flat Head Screw, 1/4"x20 x 1.25" long, fully threaded	8
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
6	Hook_1_16	1" x 16" Hook, Adhesive Backed	2
7	Loop_1_16	1" x 16" Loop, Adhesive Backed	2
8	Hook_1_1	1" x 1" Hook, Adhesive Backed	4
9	Loop_1_1	1" x 1" Loop, Adhesive Backed	4

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	DF	12/30/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

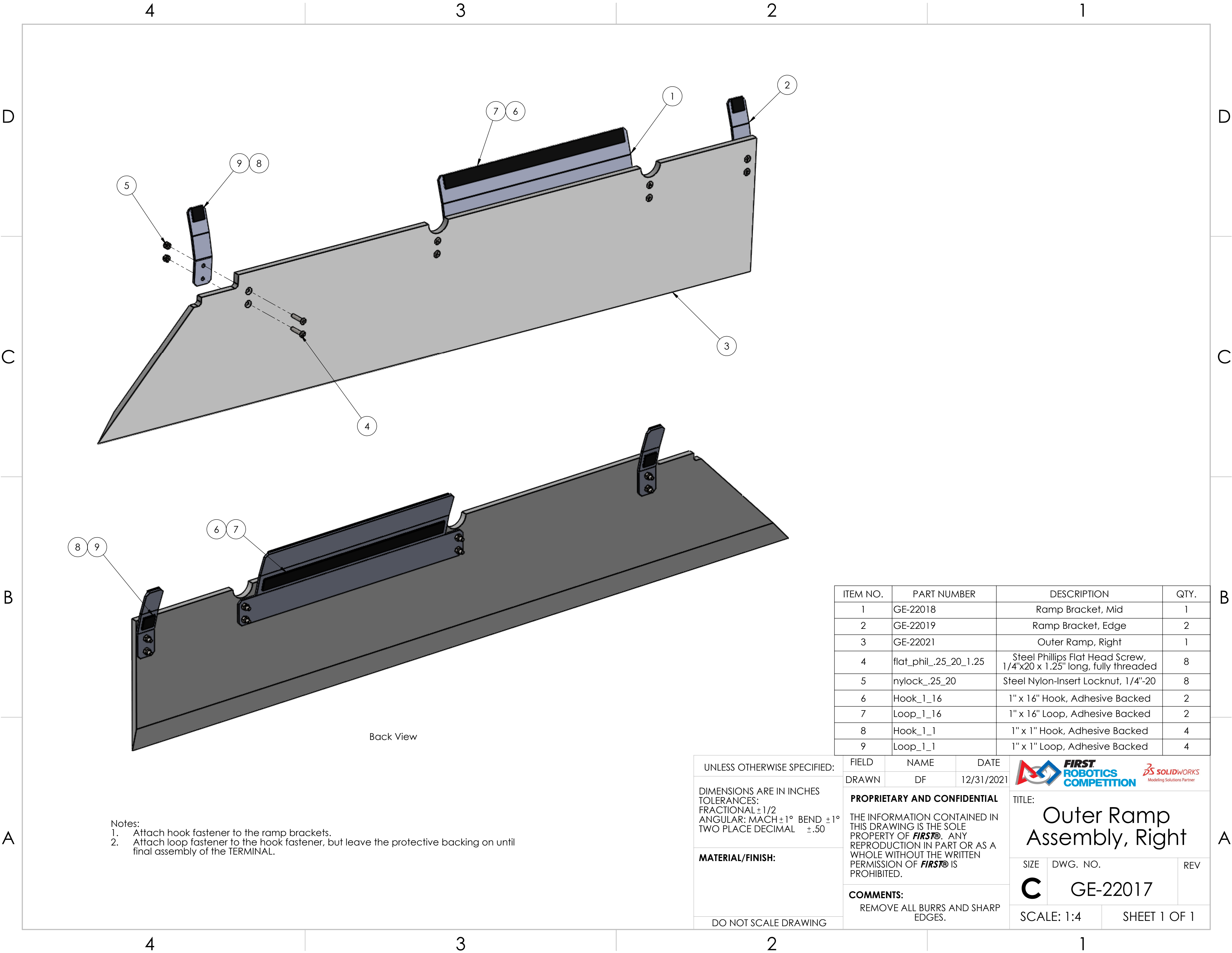


TITLE:
Outer Ramp Assembly, Left

SIZE	DWG. NO.	REV
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C	GE-22016	
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SCALE: 1:4	SHEET 1 OF 1
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- Notes:
- 1. Attach hook fastener to the ramp brackets.
 - 2. Attach loop fastener to the hook fastener, but leave the protective backing on until final assembly of the TERMINAL.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22018	Ramp Bracket, Mid	1
2	GE-22019	Ramp Bracket, Edge	2
3	GE-22021	Outer Ramp, Right	1
4	flat_phil_.25_20_1.25	Steel Phillips Flat Head Screw, 1/4"x20 x 1.25" long, fully threaded	8
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
6	Hook_1_16	1" x 16" Hook, Adhesive Backed	2
7	Loop_1_16	1" x 16" Loop, Adhesive Backed	2
8	Hook_1_1	1" x 1" Hook, Adhesive Backed	4
9	Loop_1_1	1" x 1" Loop, Adhesive Backed	4

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN	DF	12/31/2021
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL		
DO NOT SCALE DRAWING		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Outer Ramp Assembly, Right		
		SIZE	DWG. NO.	REV
		C	GE-22017	
		SCALE: 1:4 SHEET 1 OF 1		



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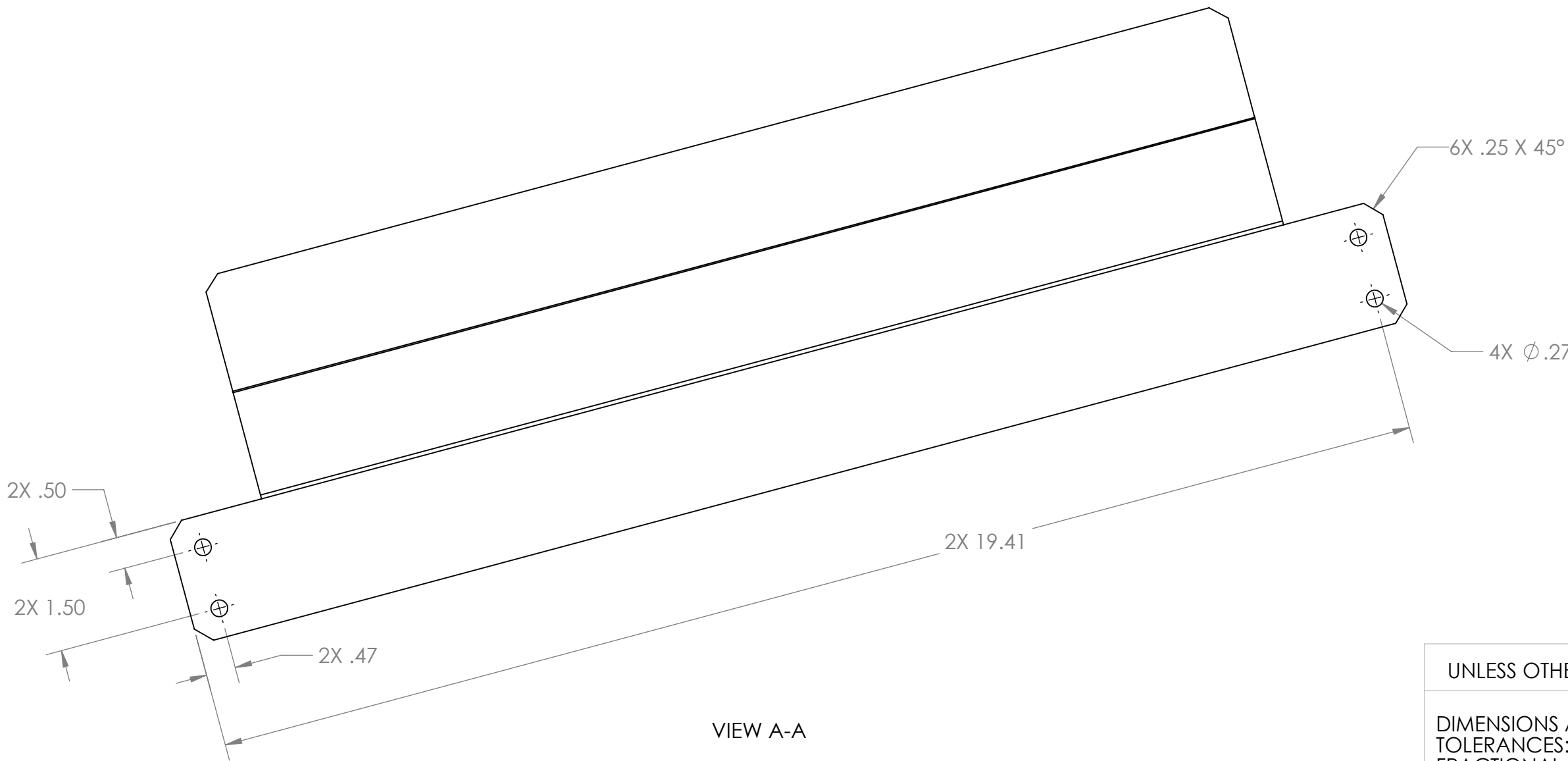
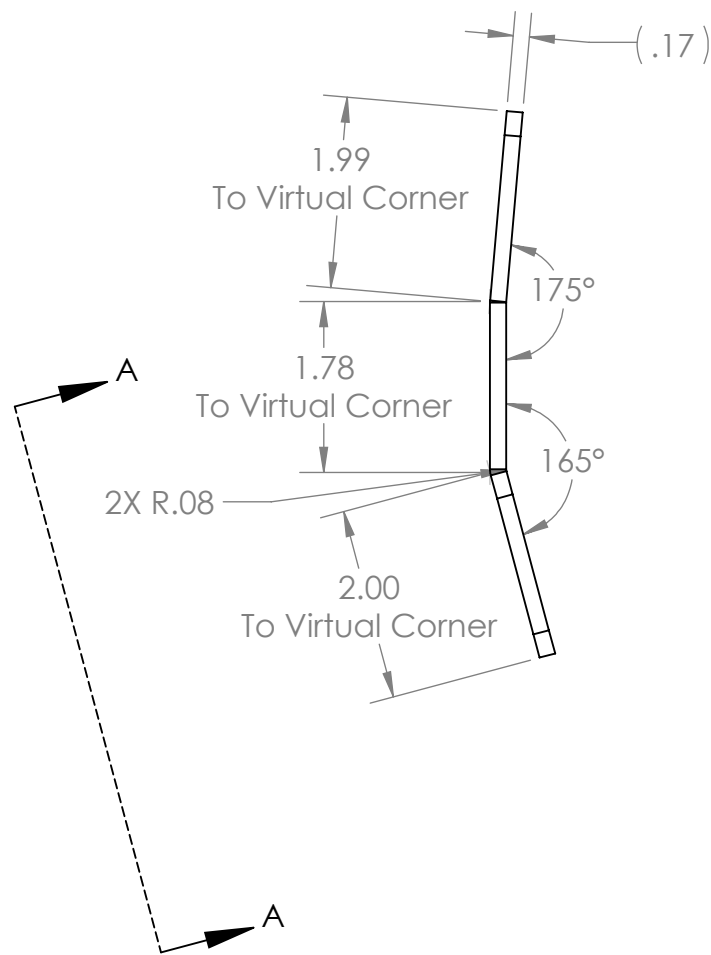
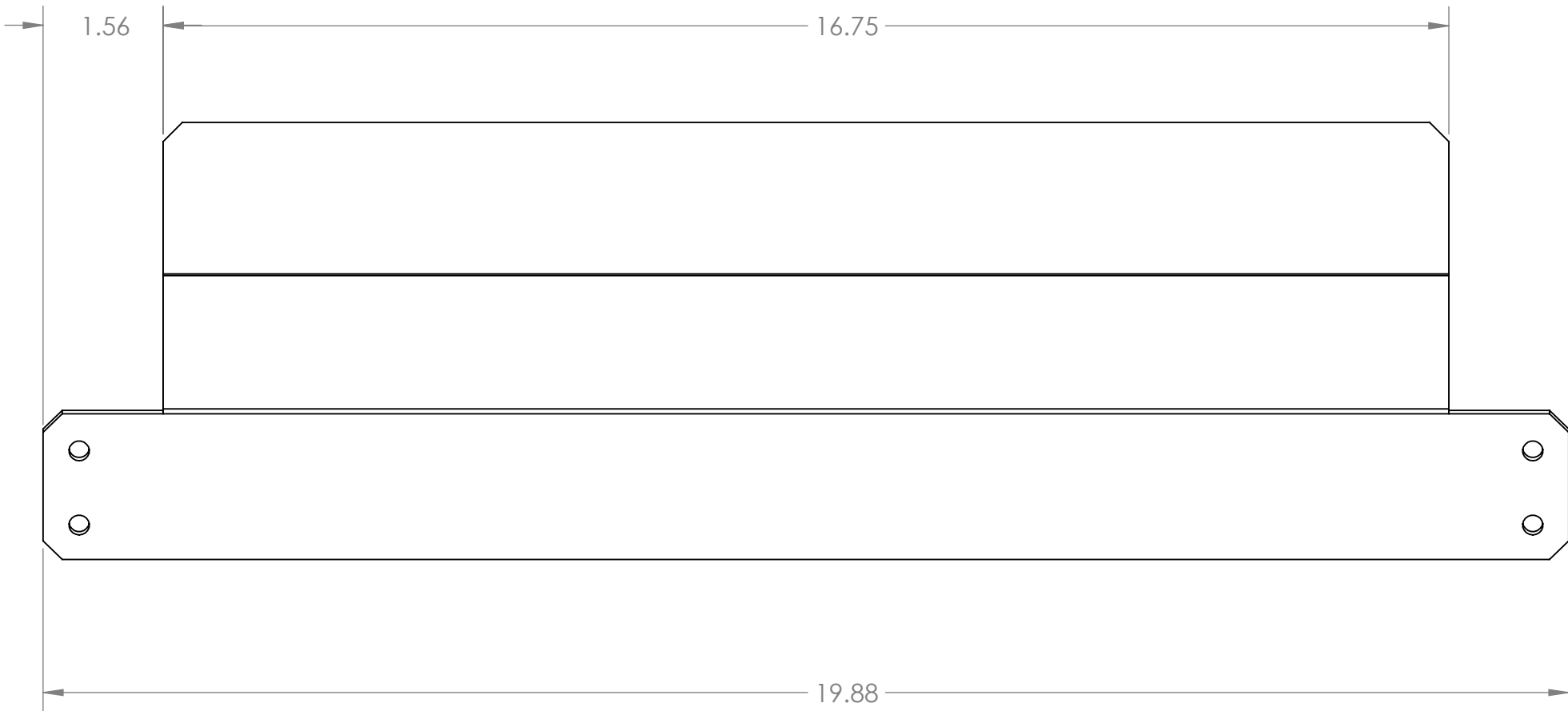
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:

8 ga, Pre-plated Steel

DO NOT SCALE DRAWING

BEND

DRAWN

NAME

DF

DATE

4/9/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Ramp Bracket,
Mid

SIZE

C

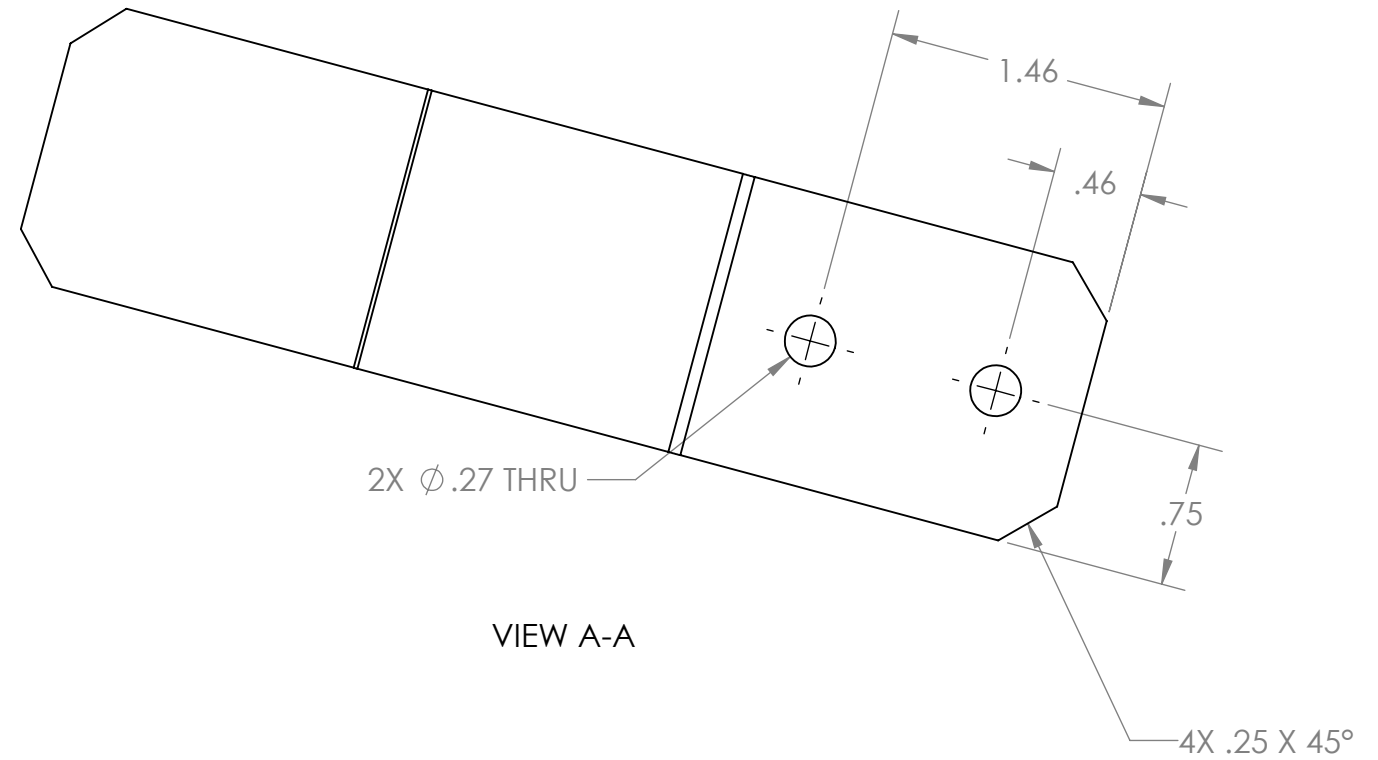
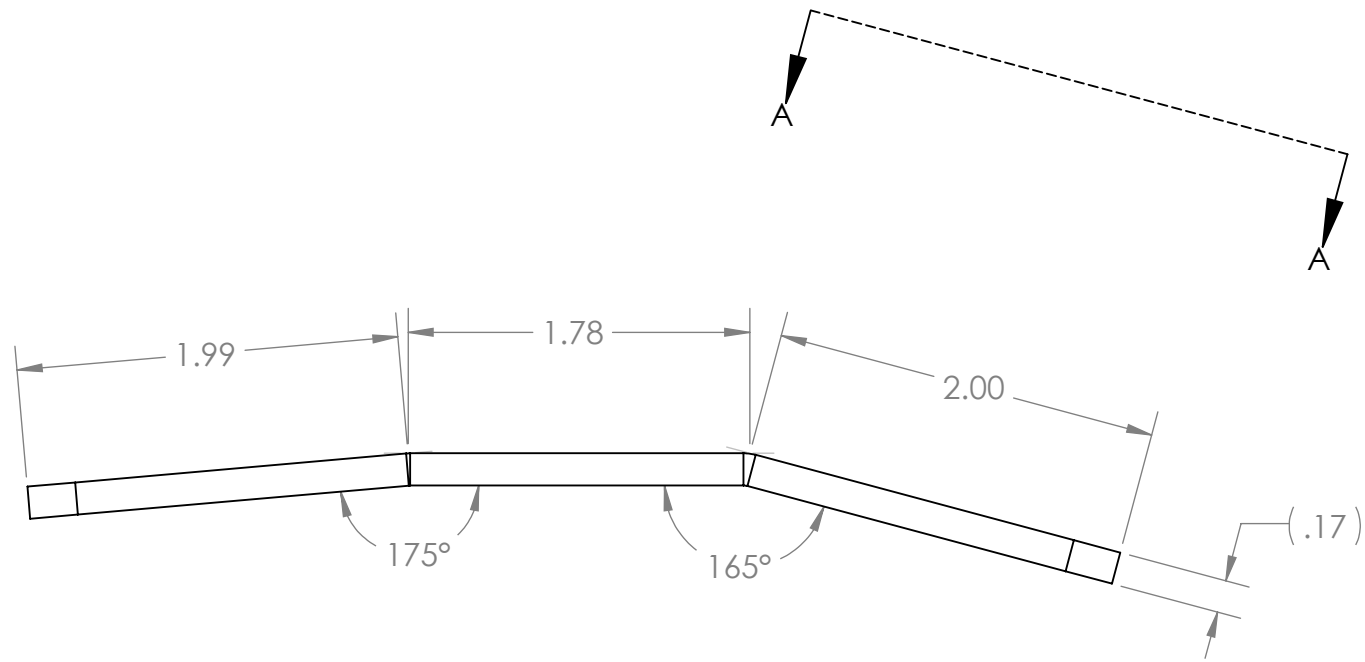
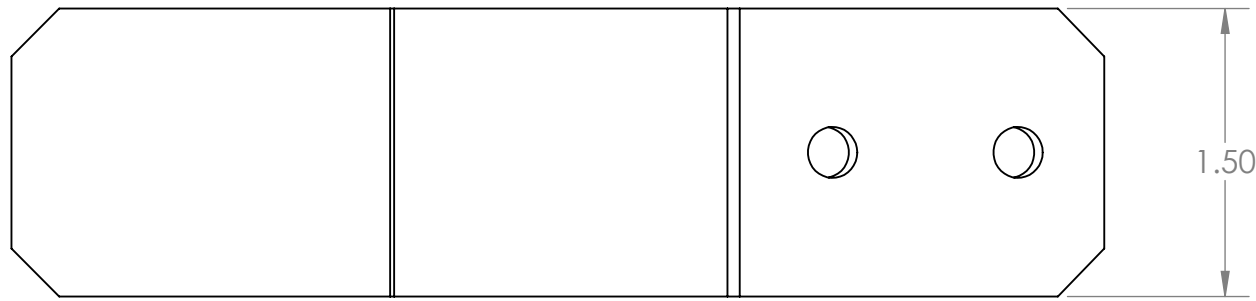
DWG. NO.

GE-22018



REV

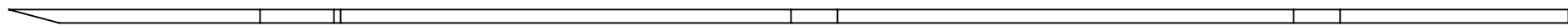
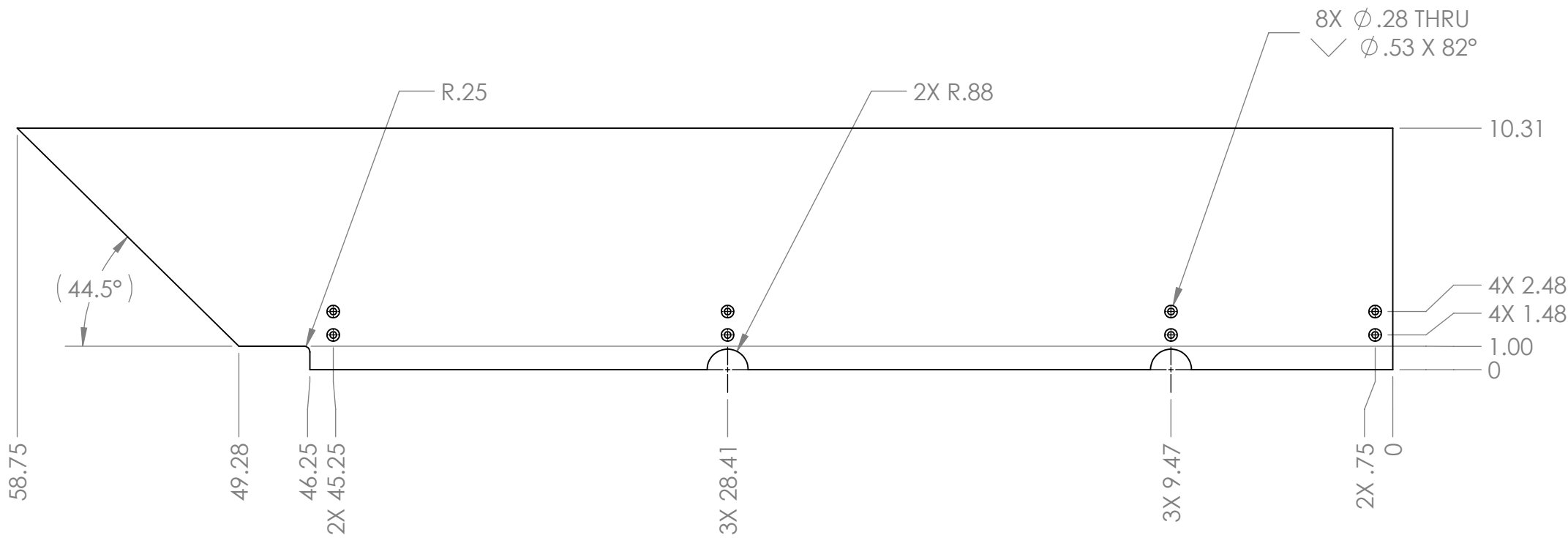
SCALE: 1:2

SHEET 1 OF 1





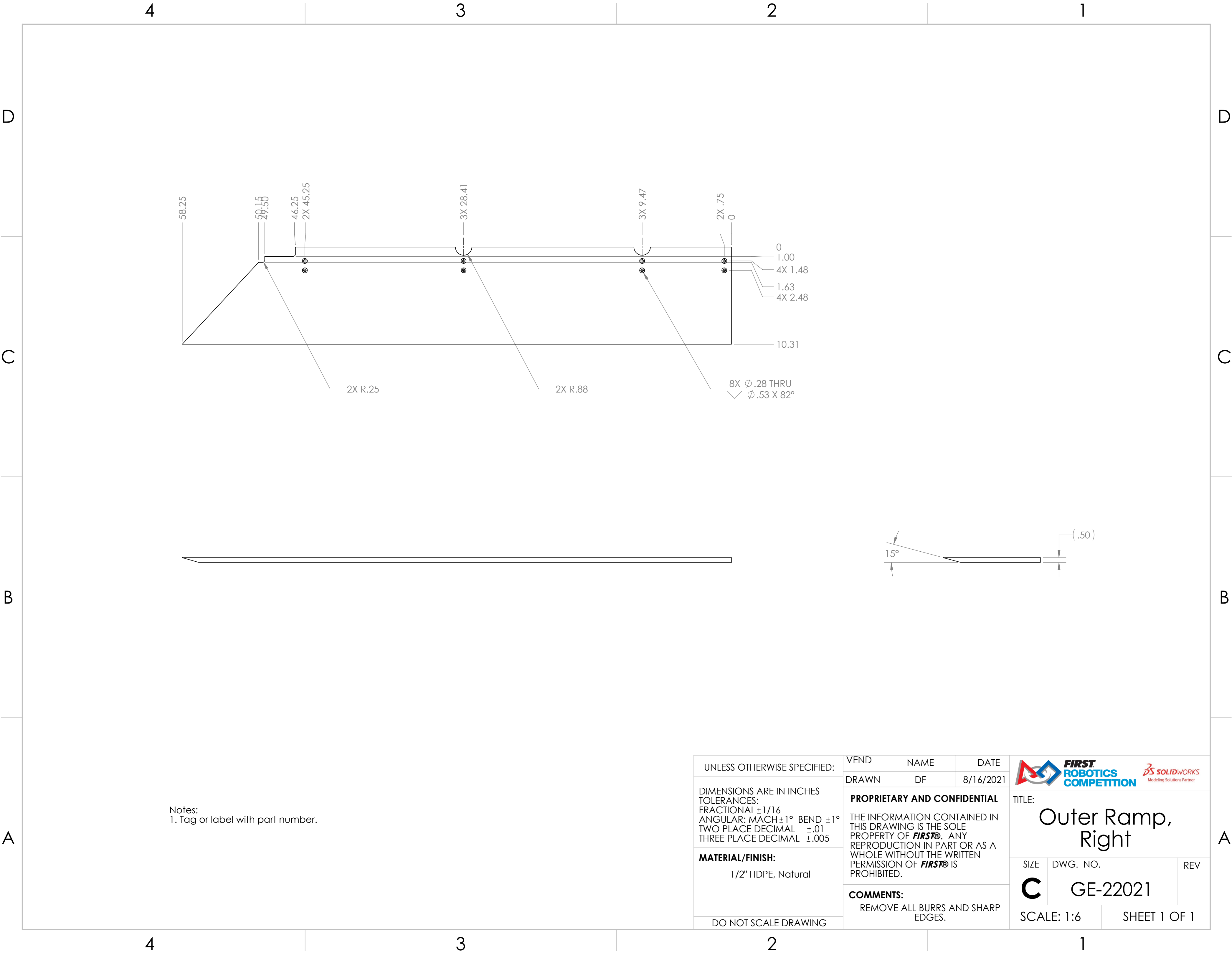
Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div> <div>TITLE: Ramp Bracket, Edge</div>		
	DRAWN	DF	4/9/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22019	
MATERIAL/FINISH: 8 ga. Pre-plated Steel				SCALE: 1:1		SHEET 1 OF 1
DO NOT SCALE DRAWING						





Notes:
1. Tag or Label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	DF	8/16/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Outer Ramp, Left		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22020	
MATERIAL/FINISH: 1/2" HDPE, Natural	DO NOT SCALE DRAWING			SCALE: 1:6		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>	
	DRAWN	DF	8/16/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Outer Ramp, Right	
	MATERIAL/FINISH:			SIZE	
1/2" HDPE, Natural				DWG. NO.	
				REV	
	COMMENTS:			C	
	REMOVE ALL BURRS AND SHARP EDGES.			GE-22021	
DO NOT SCALE DRAWING				SCALE: 1:6	
				SHEET 1 OF 1	

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4X R.25

2X R.88

22.63

28.41

9.47

46.00

(.25)

Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/4" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

DF

8/16/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



**FIRST
ROBOTICS
COMPETITION**



TITLE:

Inner Ramp

SIZE

DWG. NO.

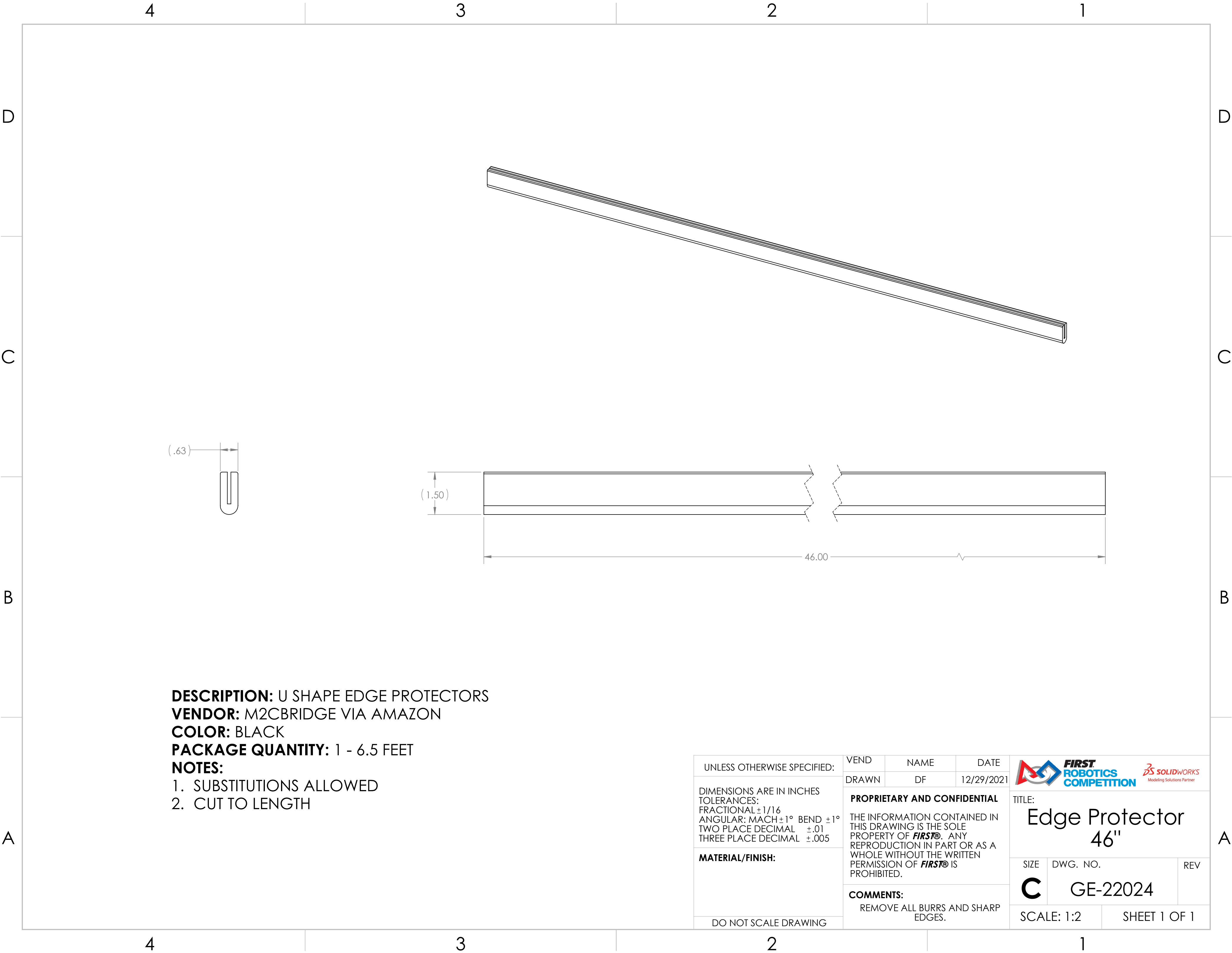
REV

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GE-22022

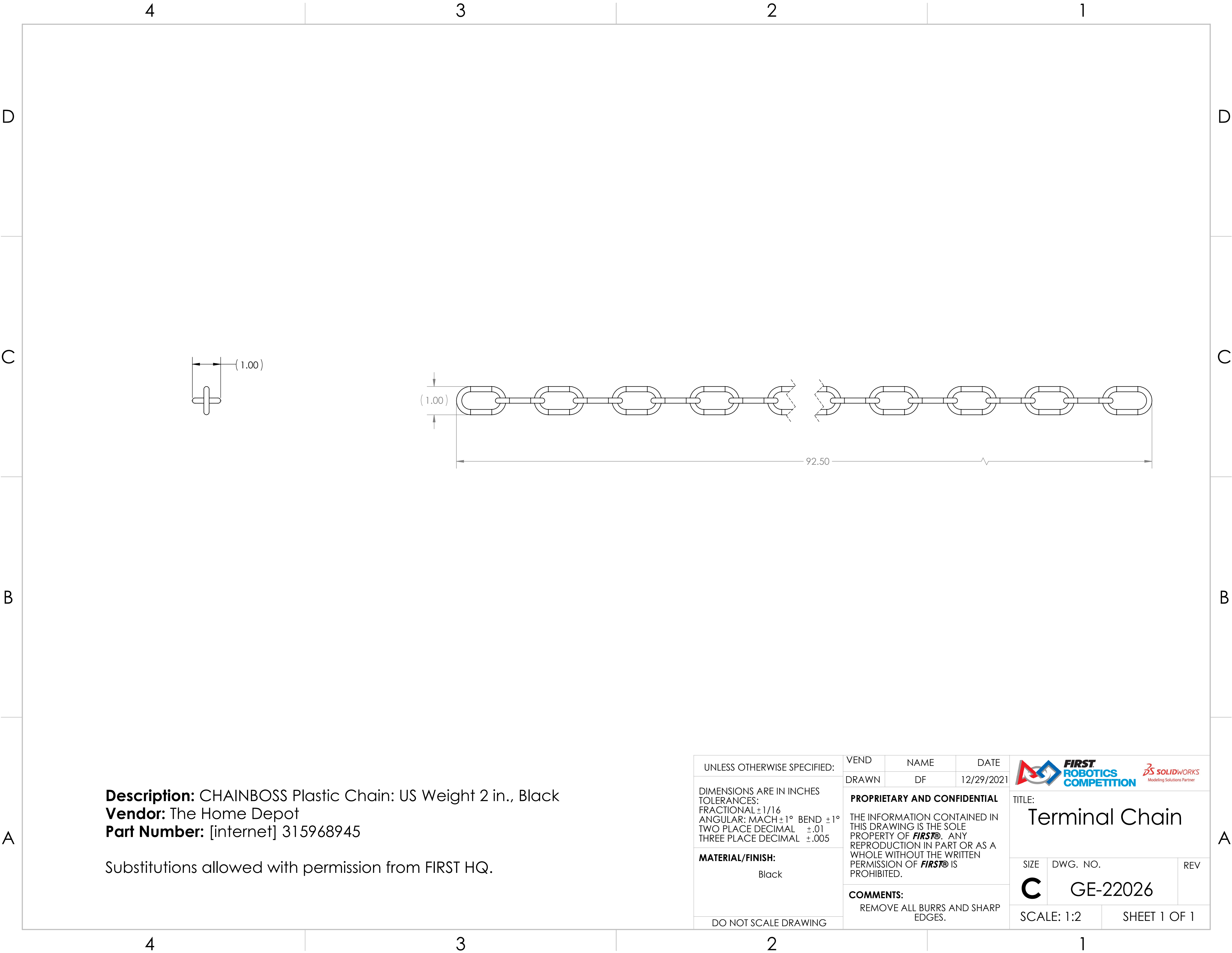
SCALE: 1:8

SHEET 1 OF 1





DESCRIPTION: U SHAPE EDGE PROTECTORS
VENDOR: M2CBRIDGE VIA AMAZON
COLOR: BLACK
PACKAGE QUANTITY: 1 - 6.5 FEET
NOTES:
1. SUBSTITUTIONS ALLOWED
2. CUT TO LENGTH

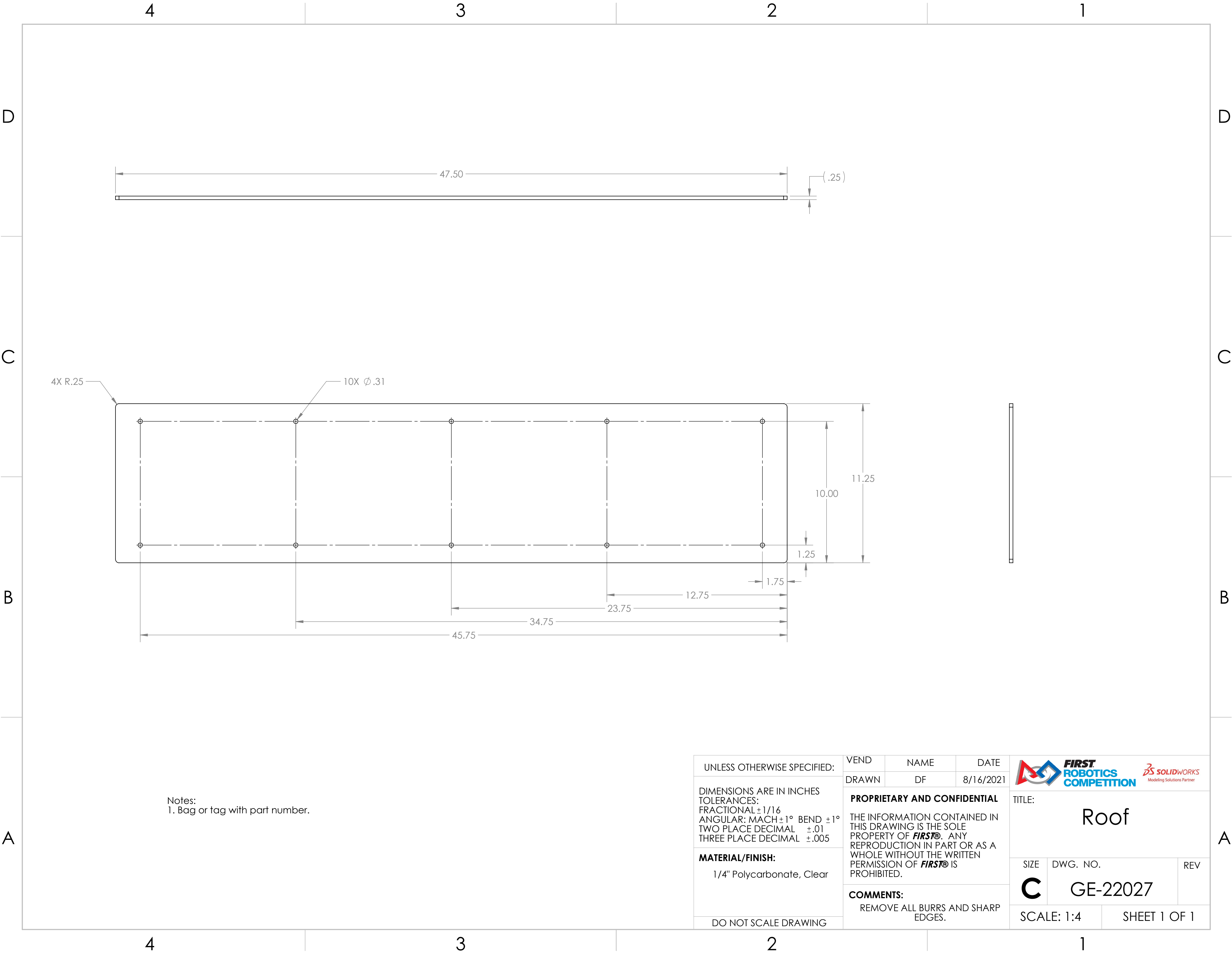
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Edge Protector 46"</div>		
	DRAWN	DF	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
SIZE				DWG. NO.	REV	
C				GE-22024		
			SCALE: 1:2		SHEET 1 OF 1	





Description: CHAINBOSS Plastic Chain: US Weight 2 in., Black
Vendor: The Home Depot
Part Number: [internet] 315968945

Substitutions allowed with permission from FIRST HQ.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	DF	12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: <div>Terminal Chain</div>		
	MATERIAL/FINISH: Black	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
	C				GE-22026	
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1



Notes:
1. Bag or tag with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: Roof</div>		
	DRAWN	DF	8/16/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22027	
				SCALE: 1:4		SHEET 1 OF 1
MATERIAL/FINISH: 1/4" Polycarbonate, Clear						
DO NOT SCALE DRAWING						

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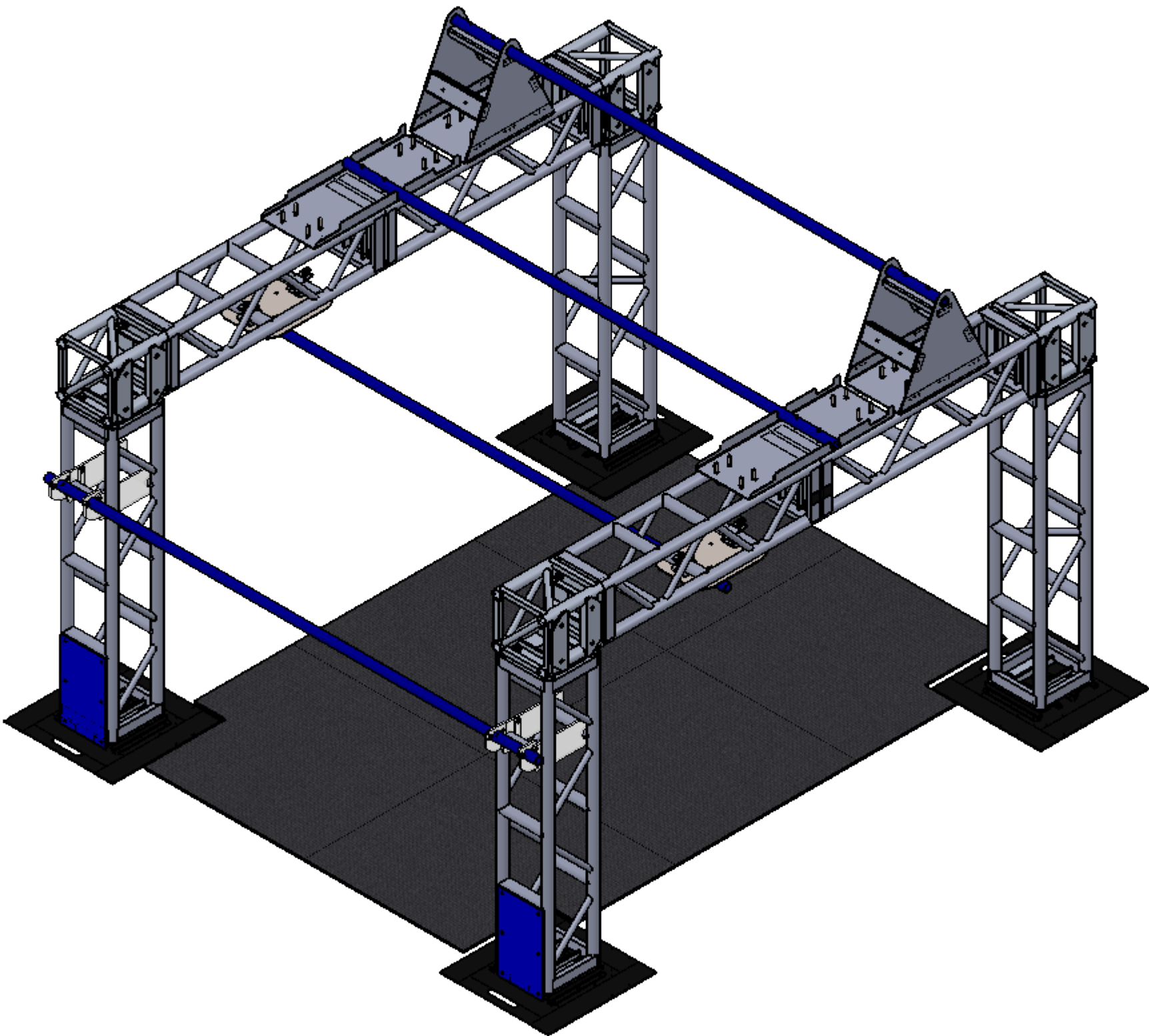
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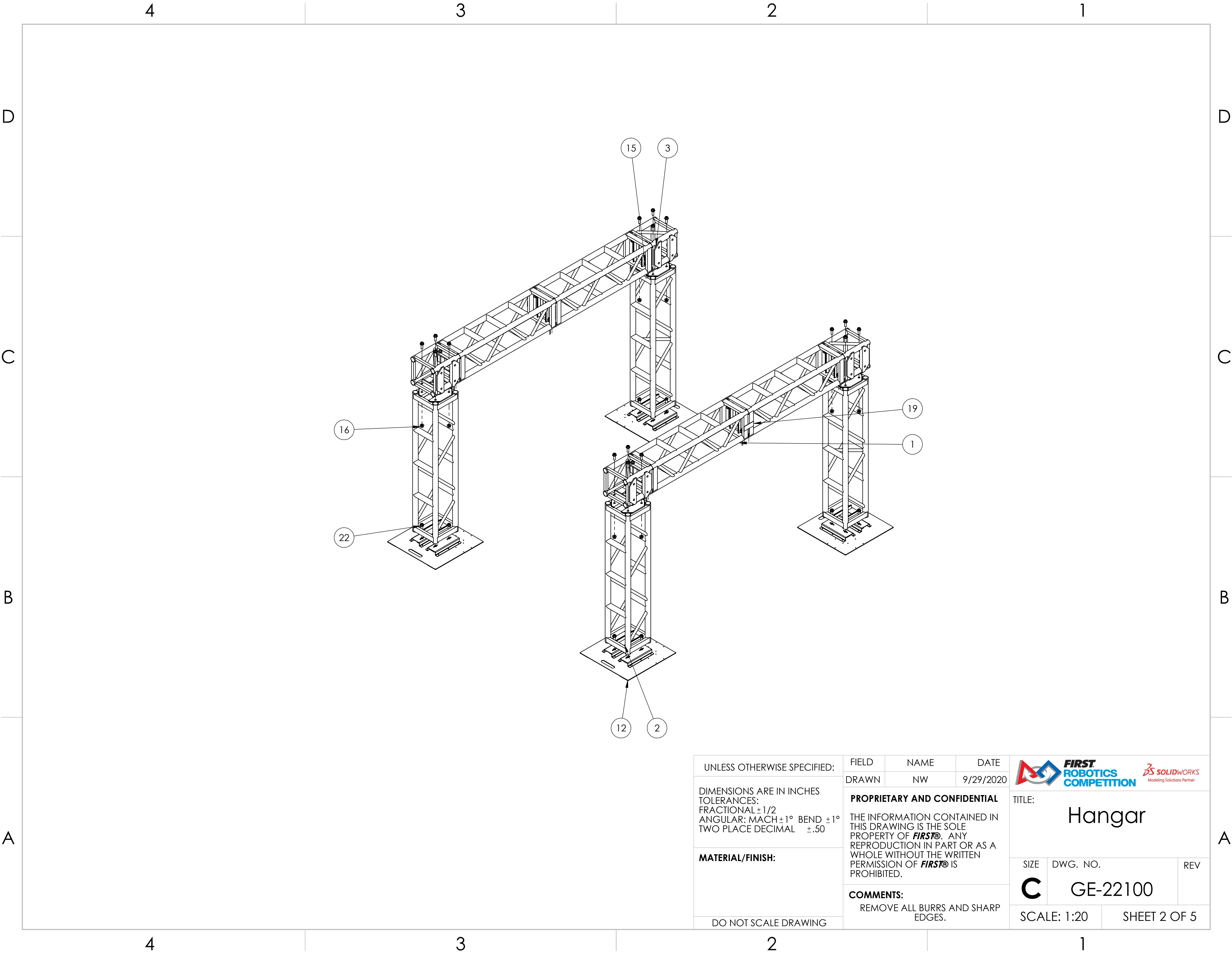
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4		3	
ITEM NO.	PART NUMBER	DESCRIPTION	
1	FE-01002	4' x 1' x 1' Square Truss	4
2	FE-01003	5' x 1' x 1' Square Truss	4
3	FE-01012	3 Way Corner Block	4
4	GE-22101	Floor Protection Assembly	1
5	GE-22107	Launch pad blue	2
6	GE-22111	Low bar holder	4
7	GE-22112	Low bar clamp	4
8	GE-22120	under hung assembly	2
9	GE-22130	Upper transition bar holder	2
10	GE-22140	mid transition bar holder	2
11	GE-22150	Rung	4
12	GE-22170	Truss Base - Sheet Metal Assembly	4
13	hex_.25_20_1.25	Steel Hex Head Screw, 1/4"-20 x 1.25" long, fully threaded	16
14	hex_.375_16_3_partial	Steel Hex Head Screw, 3/8"-16, 3" long	13
15	hex_.625_11_2.00	Hex Head Bolt, 5/8"-11 Thread, 2" length	56
16	hexnut_.625_11	5/8"-11 hex nut	40
17	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16
18	nylock_.375_16	Steel Nylon-Insert Locknut, 3/8"-16	12
19	tapeline_HANGARHeight	2" Gaffers Tape, Black	2
20	Ubolt_.375_2.4375_4.4375	U-Bolt 3/8-16 x 2-7/16 ID x 4-7/16 height	16
21	washer_flat_.25	Flat Washer for 1/4" Screw	32
22	washer_flat_.625	Flat washer for 5/8" screw	96

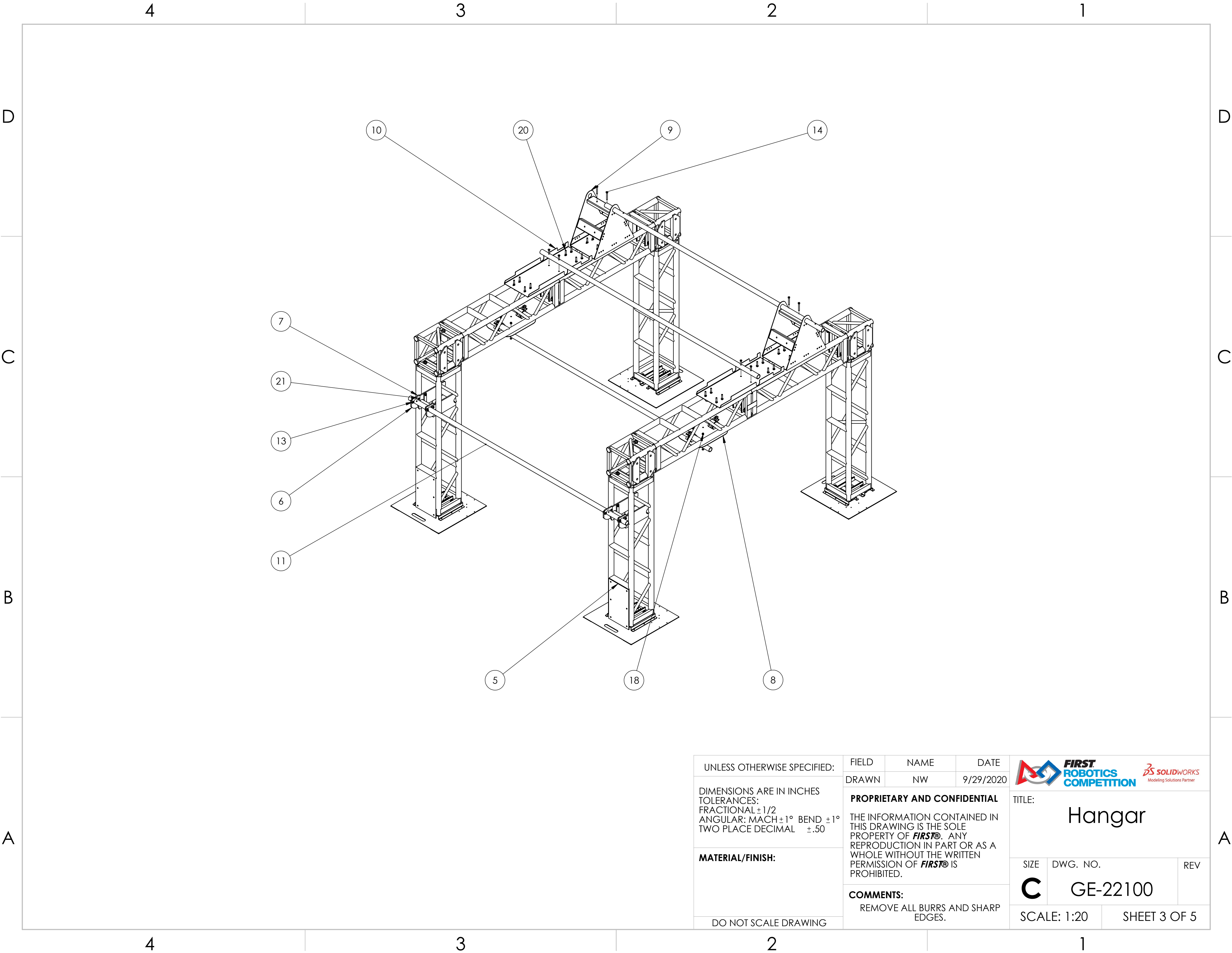




Notes:
1. Assembly exists in Red and Blue configurations.

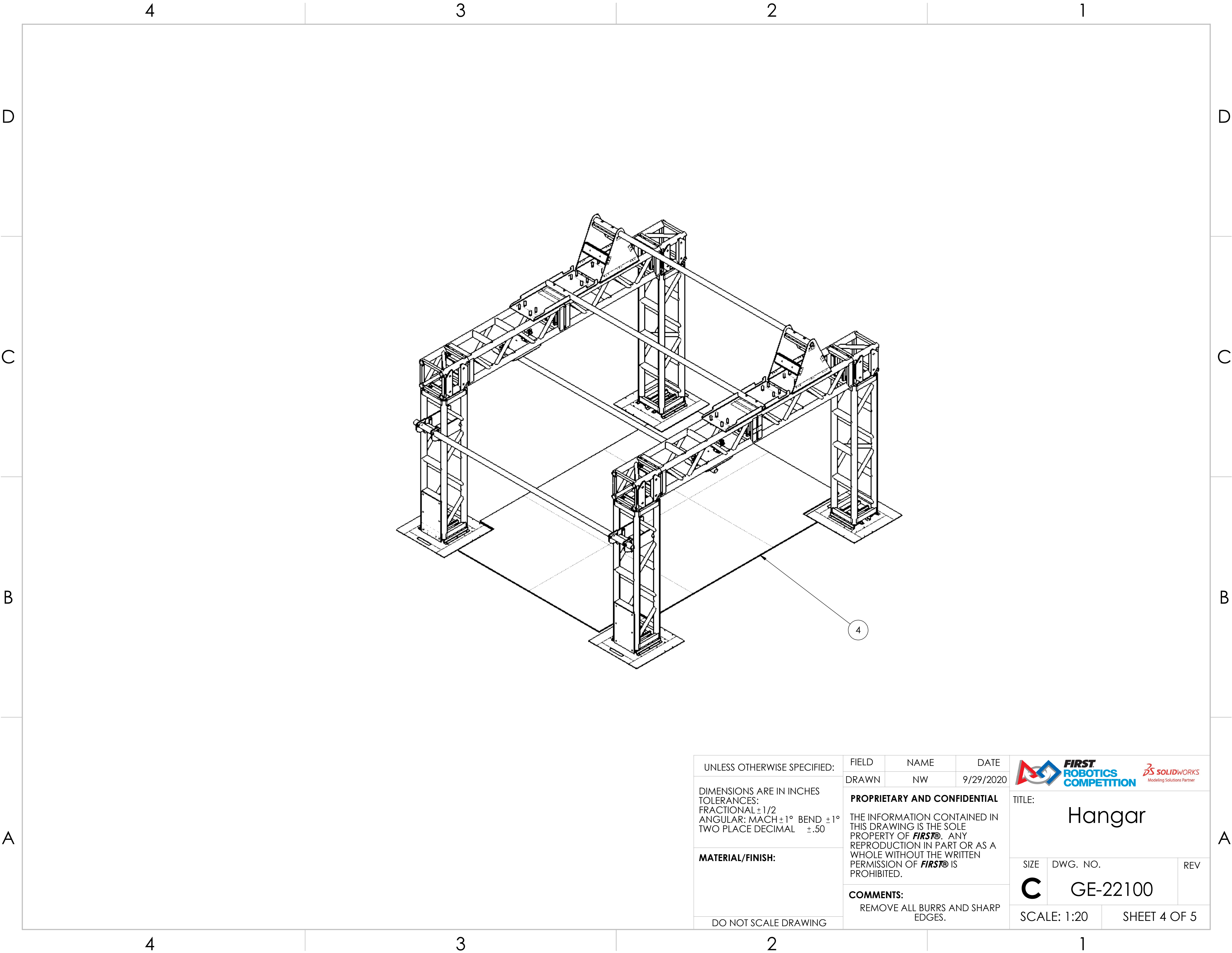
UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	NW	9/29/2020	TITLE: Hangar			
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.						
		MATERIAL/FINISH:		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22100
DO NOT SCALE DRAWING					SCALE: 1:20		SHEET 1 OF 5	



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN	NW	9/29/2020
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Hangar		
		SIZE C	DWG. NO. GE-22100	REV
		SCALE: 1:20 SHEET 2 OF 5		



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
		DRAWN	NW	9/29/2020			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Hangar		
MATERIAL/FINISH:		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-22100	
DO NOT SCALE DRAWING					SCALE: 1:20		SHEET 3 OF 5



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN	NW	9/29/2020
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Hangar		
		SIZE	DWG. NO.	REV
		C	GE-22100	
		SCALE: 1:20		SHEET 4 OF 5

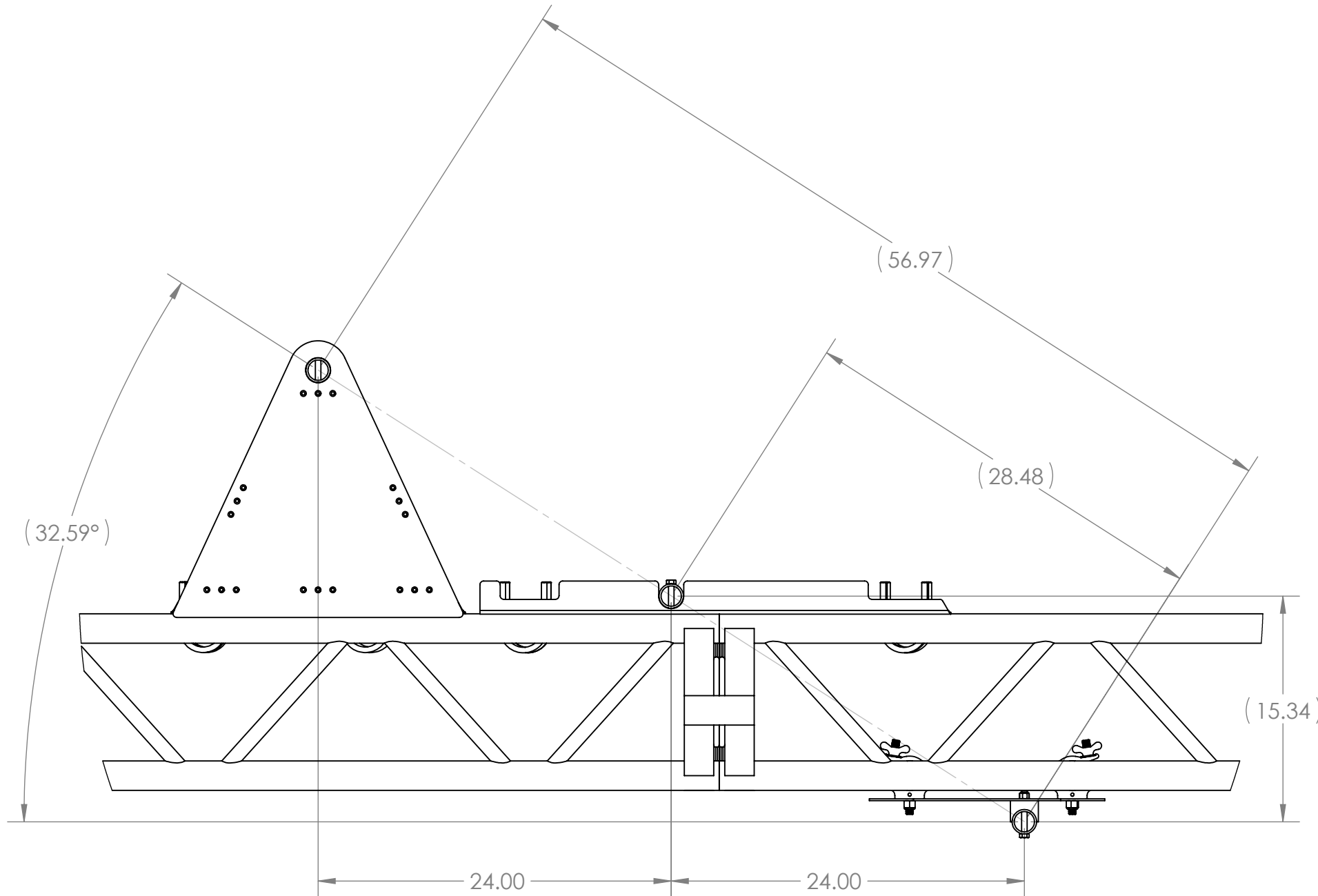
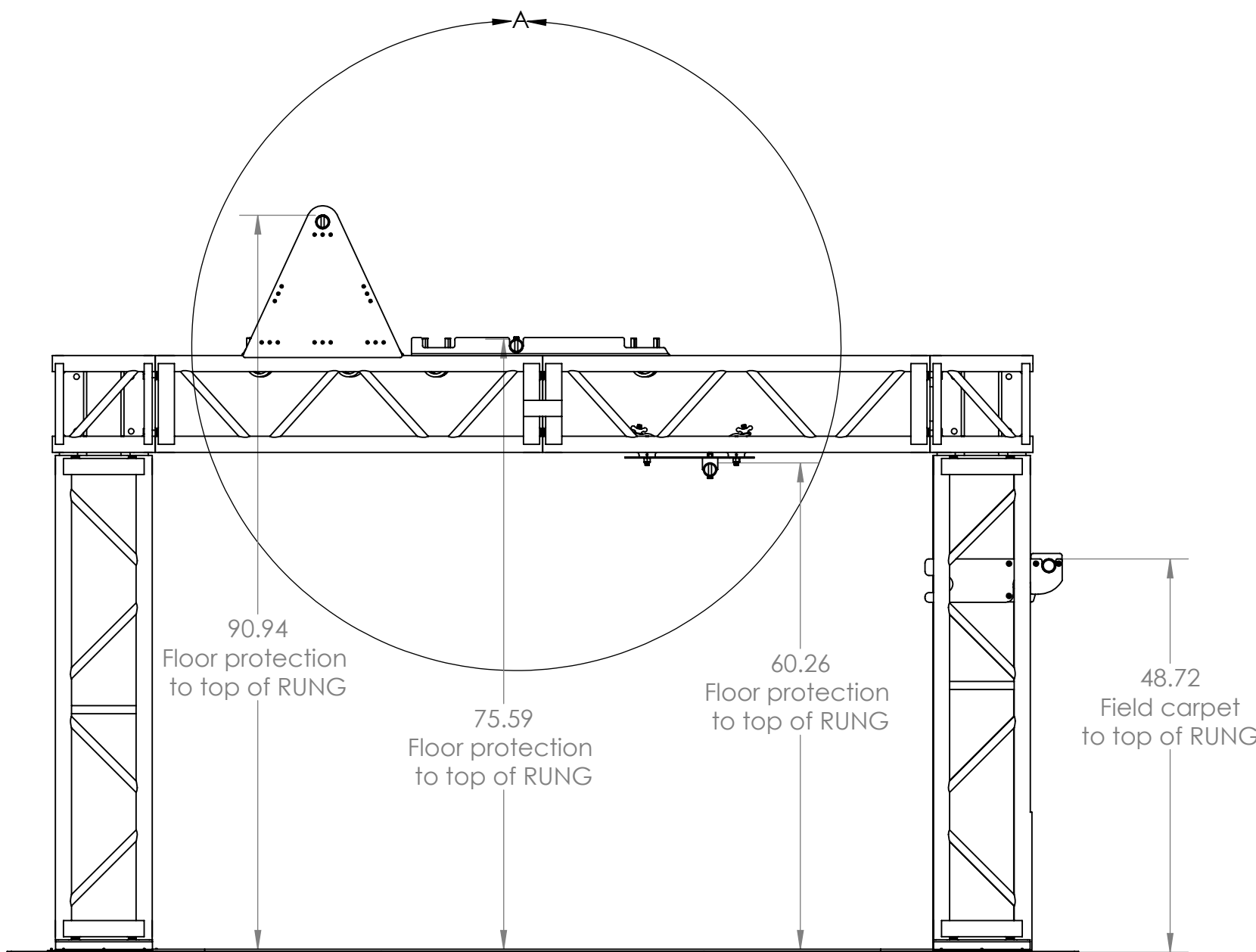
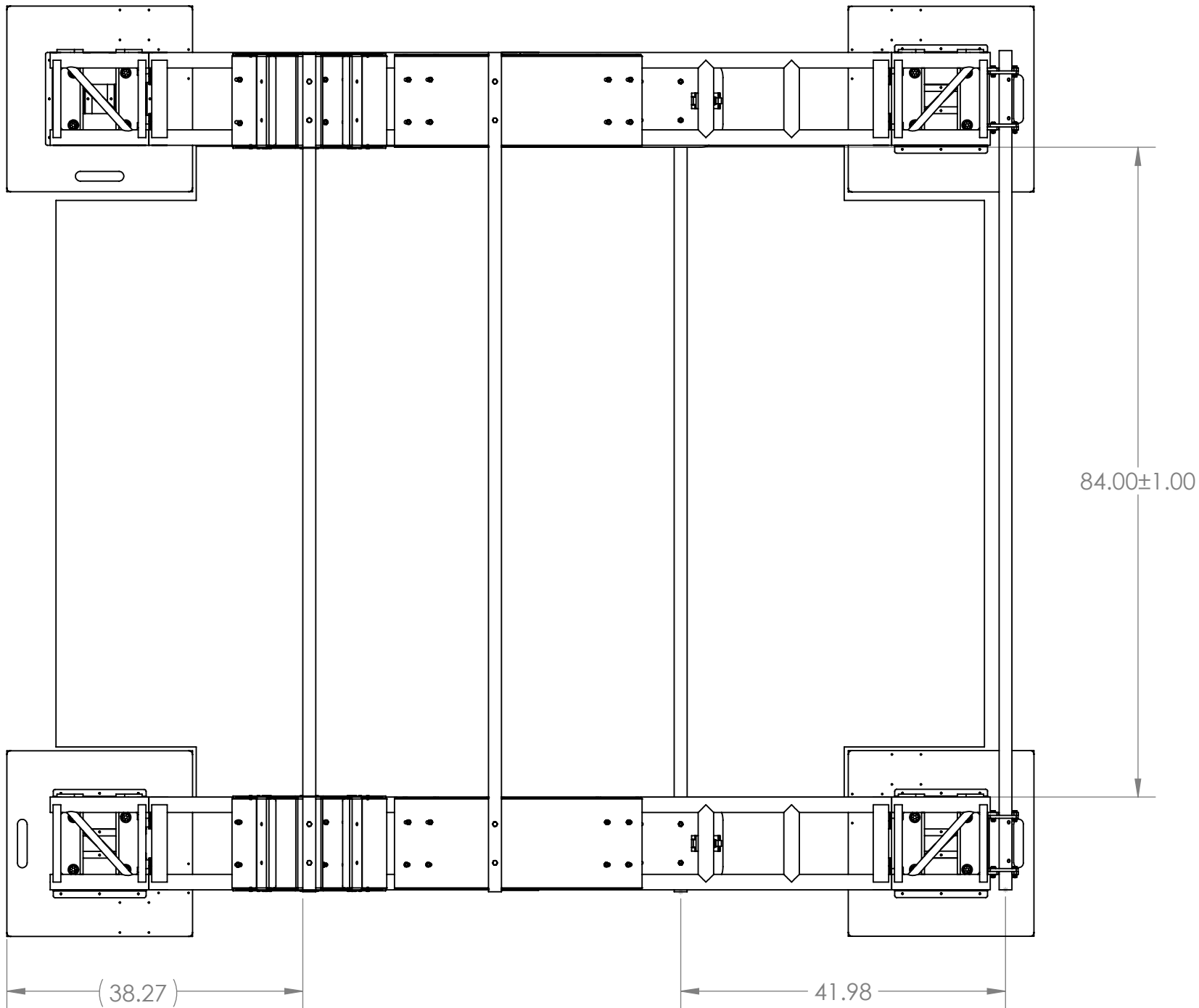


D

C



B

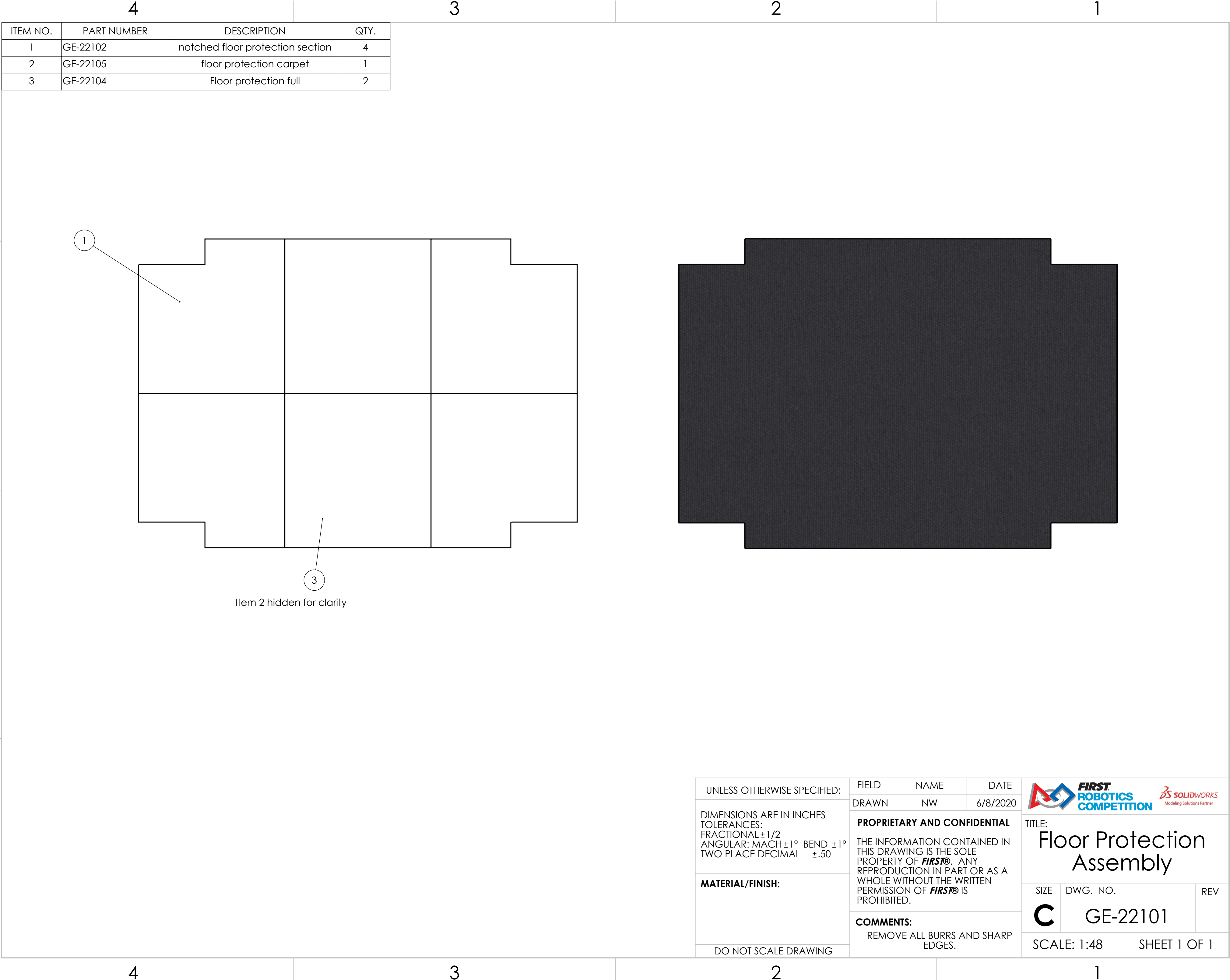
A

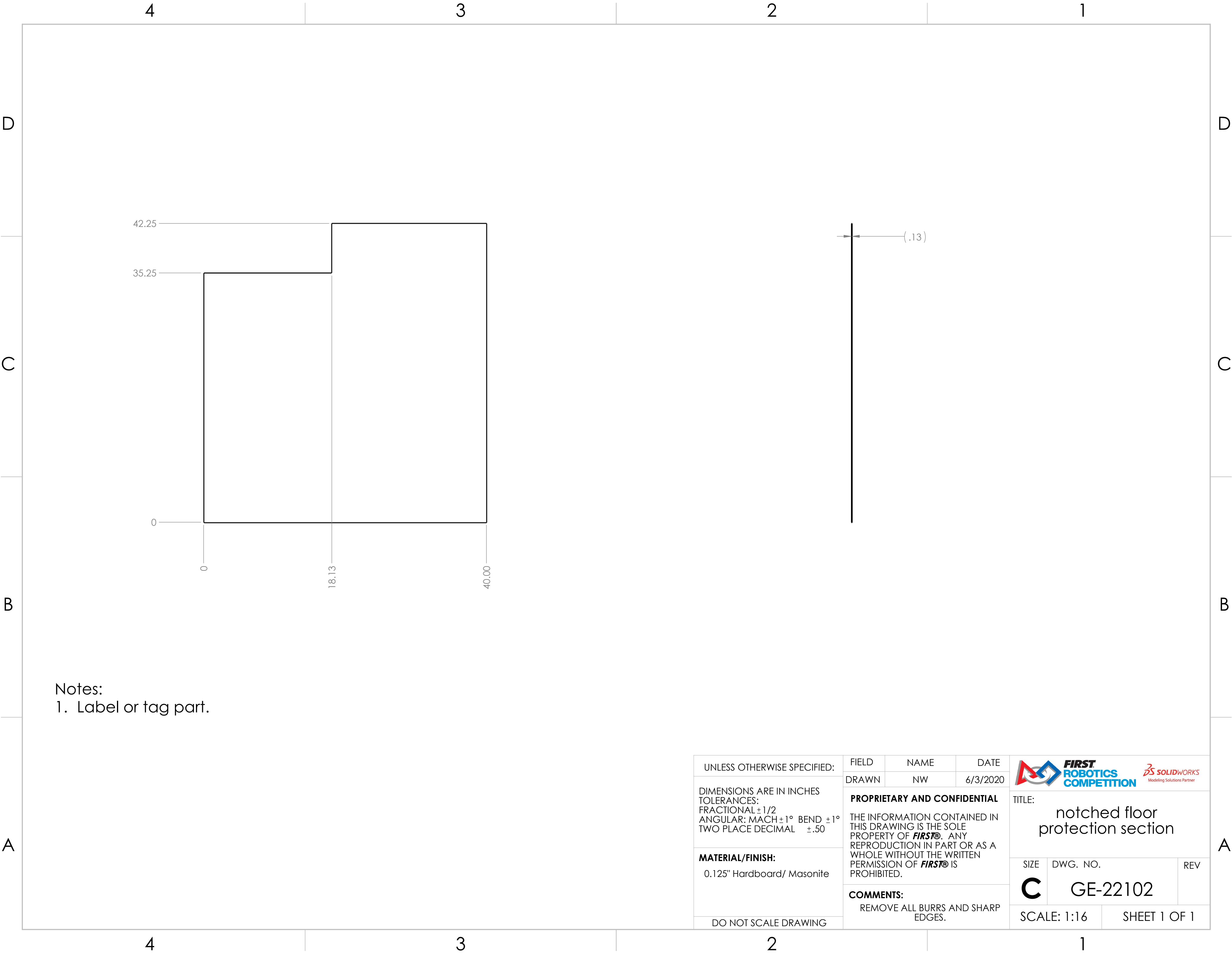


DETAIL A
SCALE 1 : 9



Notes:
1. Dimensions in parentheses are for reference only.

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .50		DRAWN	NW	9/29/2020	TITLE: Hangar			
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.						
		MATERIAL/FINISH:		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING					C	GE-22100		
					SCALE: 1:18		SHEET 5 OF 5	





Notes:
1. Label or tag part.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	NW	6/3/2020			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: notched floor protection section		
MATERIAL/FINISH: 0.125" Hardboard/ Masonite	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22102	
DO NOT SCALE DRAWING				SCALE: 1:16		SHEET 1 OF 1

4

3

2

1

D

D

C

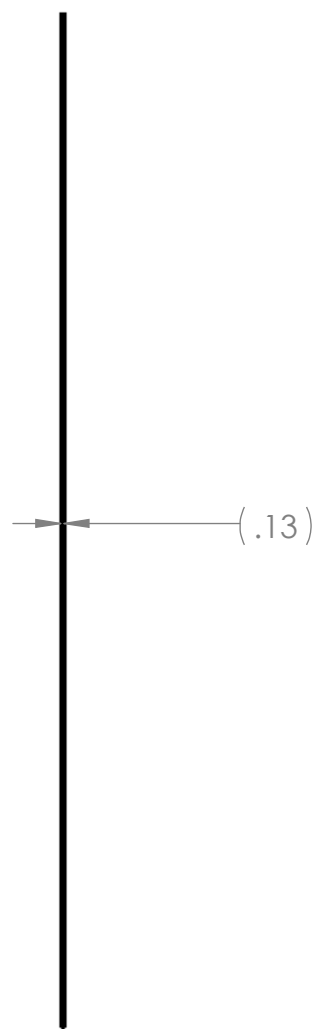
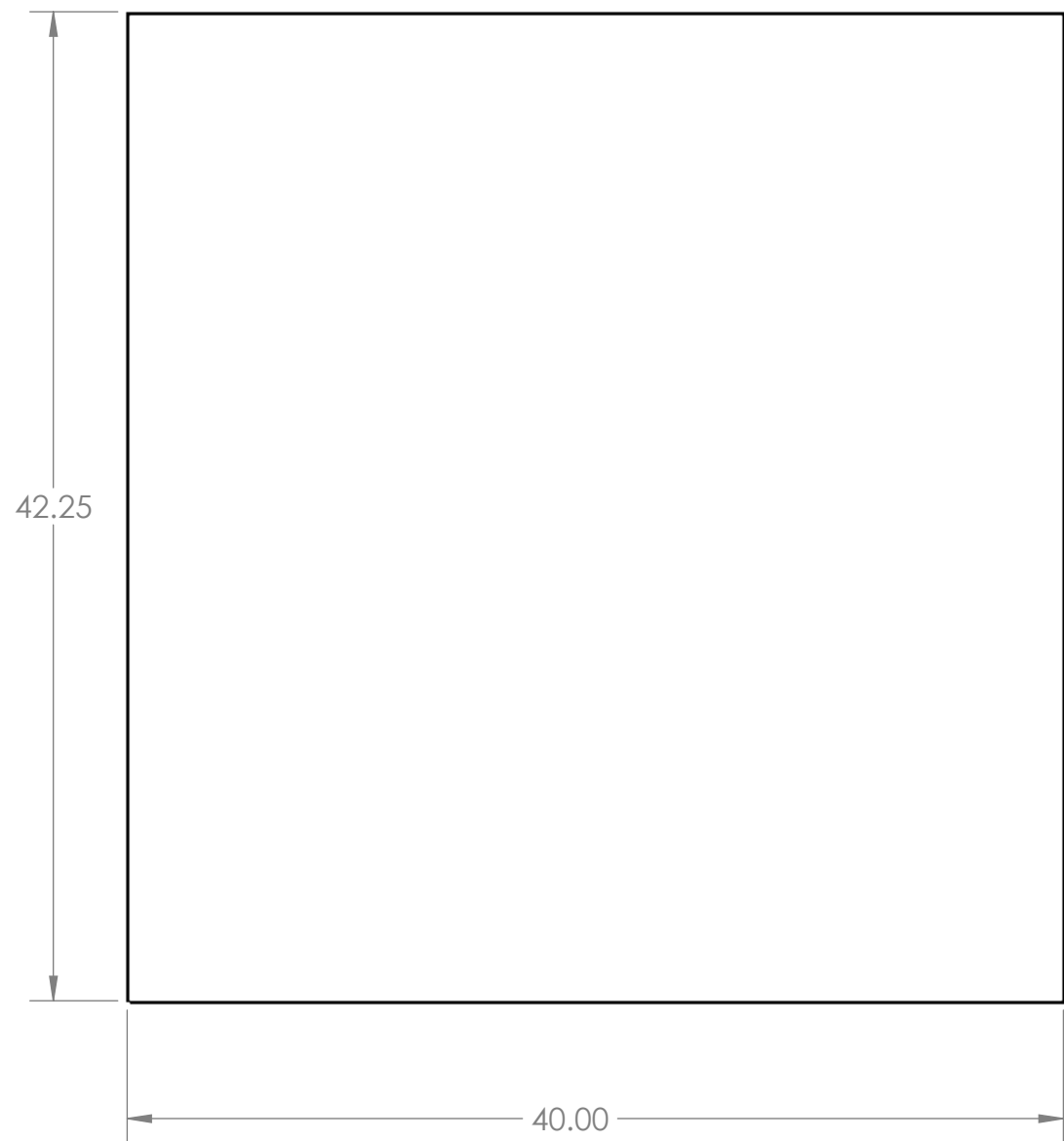
C

B



B

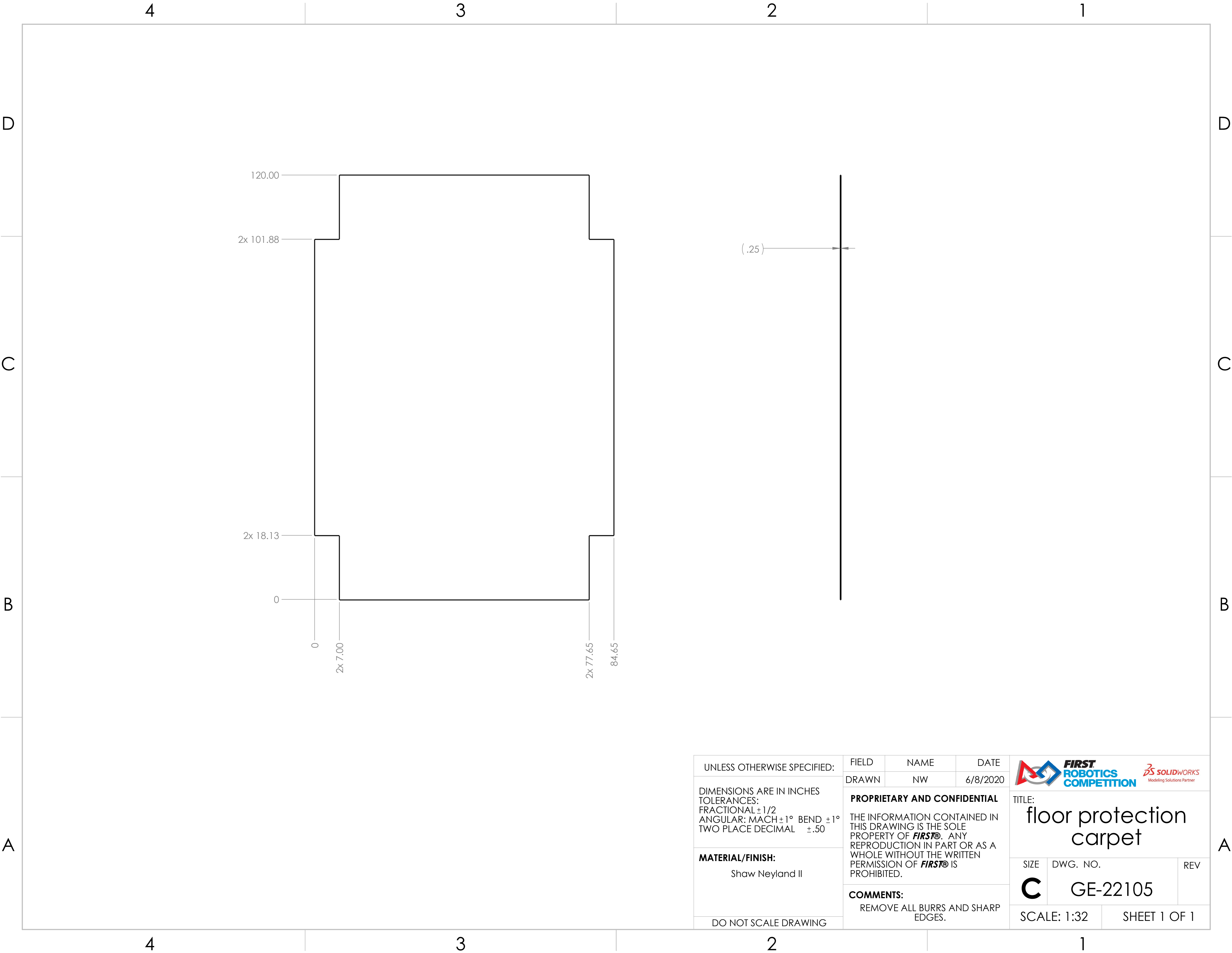
A

A

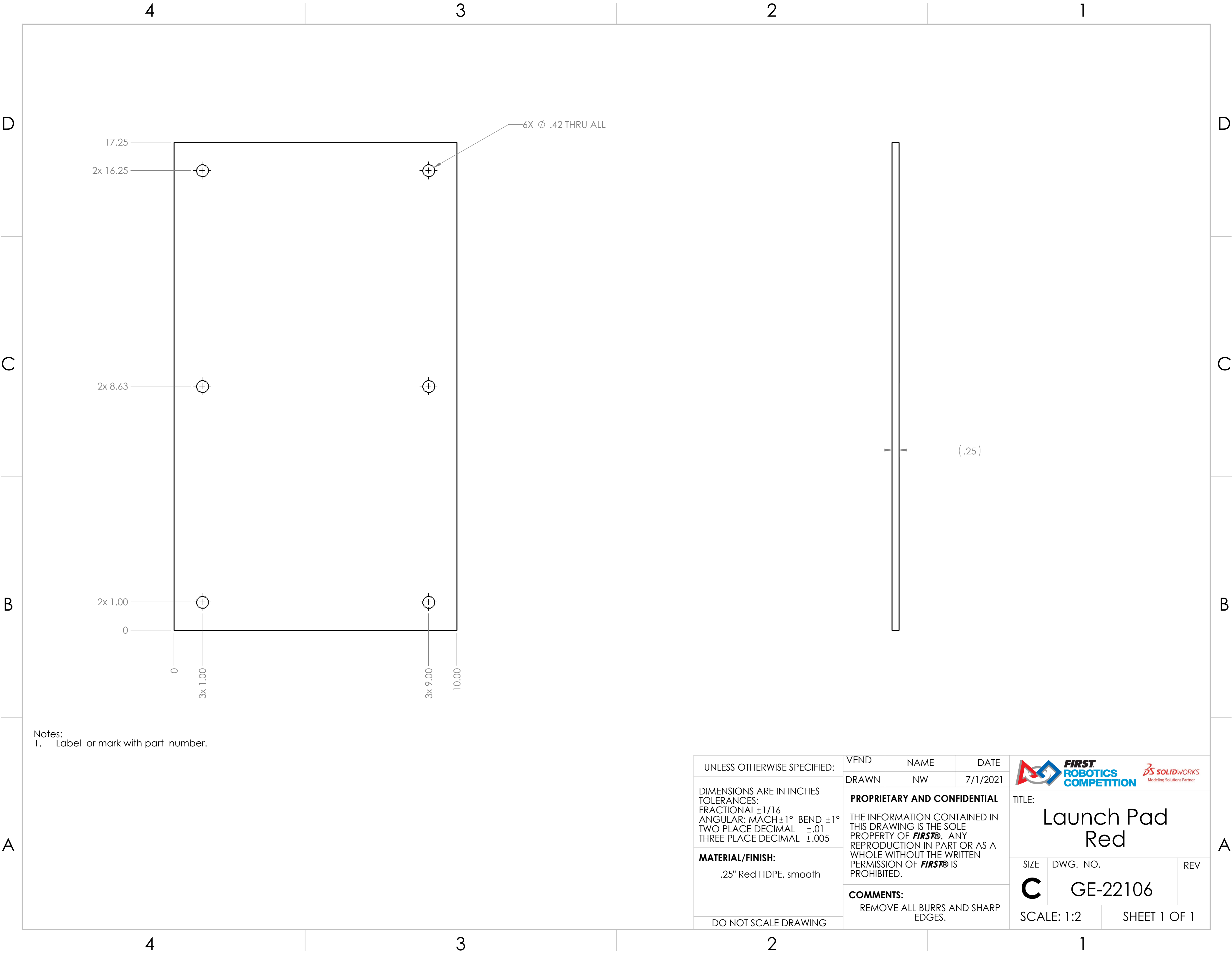


Notes:
1. Label or tag part.



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 0.125" hardboard/ masonite DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Floor protection full</div>		
	DRAWN	NW	6/3/2020			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22104	
				SCALE: 1:16		SHEET 1 OF 1



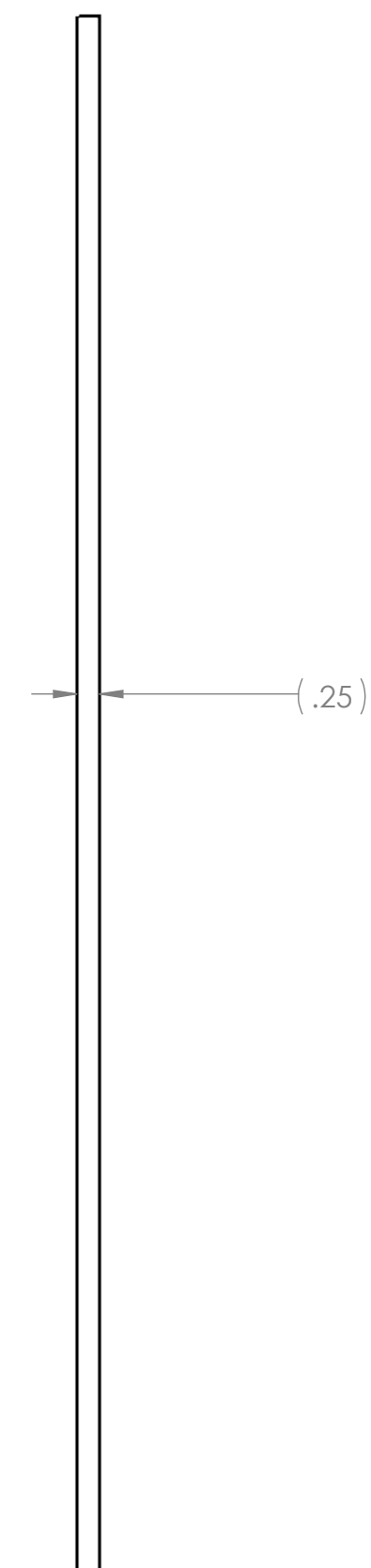
UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN	NW	6/8/2020
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
MATERIAL/FINISH: Shaw Neyland II		TITLE: floor protection carpet		
DO NOT SCALE DRAWING		SIZE C	DWG. NO. GE-22105	REV
		SCALE: 1:32		SHEET 1 OF 1



Notes:
1. Label or mark with part number.



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: .25" Red HDPE, smooth DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Launch Pad Red</div>		
	DRAWN	NW	7/1/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22106	
SCALE: 1:2		SHEET 1 OF 1				

1

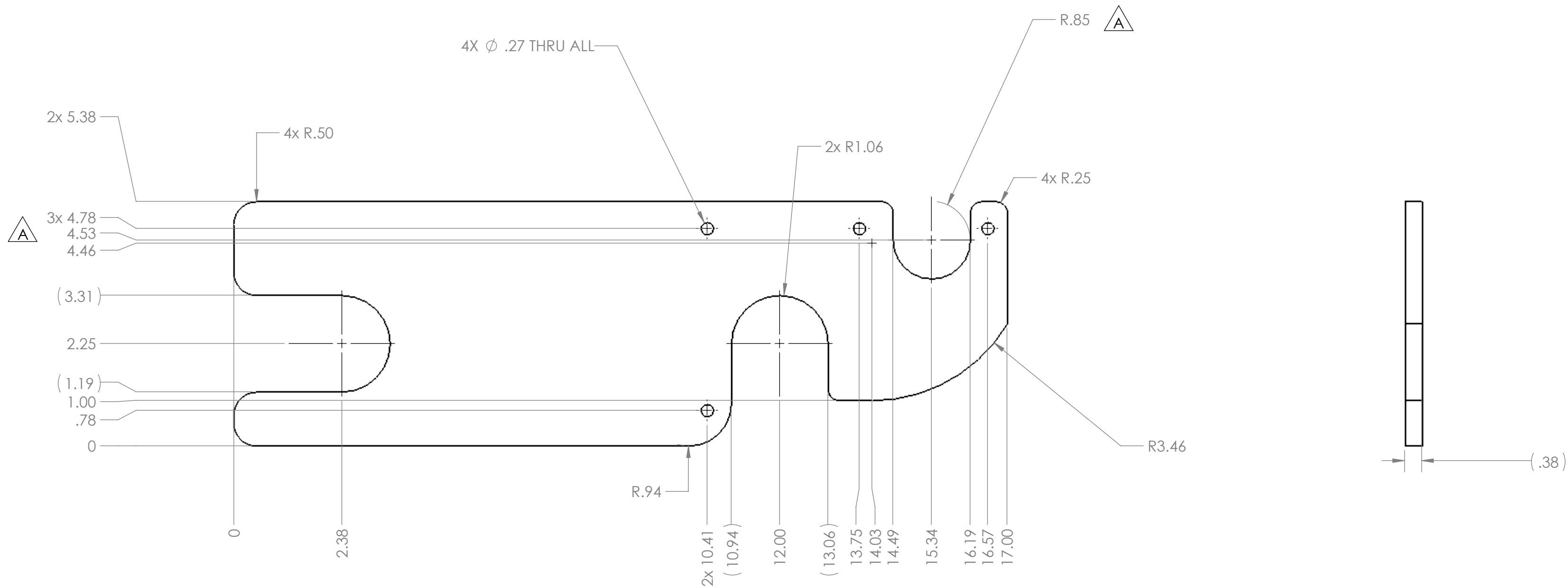


Notes:

1. Label or mark with part number.

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	 						
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		DRAWN	NW	7/1/2021							
		PROPRIETARY AND CONFIDENTIAL				TITLE: Launch pad blue					
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.									
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.									
MATERIAL/FINISH: .25" Blue HDPE, smooth						SIZE C		DWG. NO. GE-22107		REV	
DO NOT SCALE DRAWING						SCALE: 1:2		SHEET 1 OF 1			

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C4, D2	A	R .85 was R.83 4.53 was 4.55	11/18/2021	NTW



Notes:
1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
3/8" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	NW	6/5/2020

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

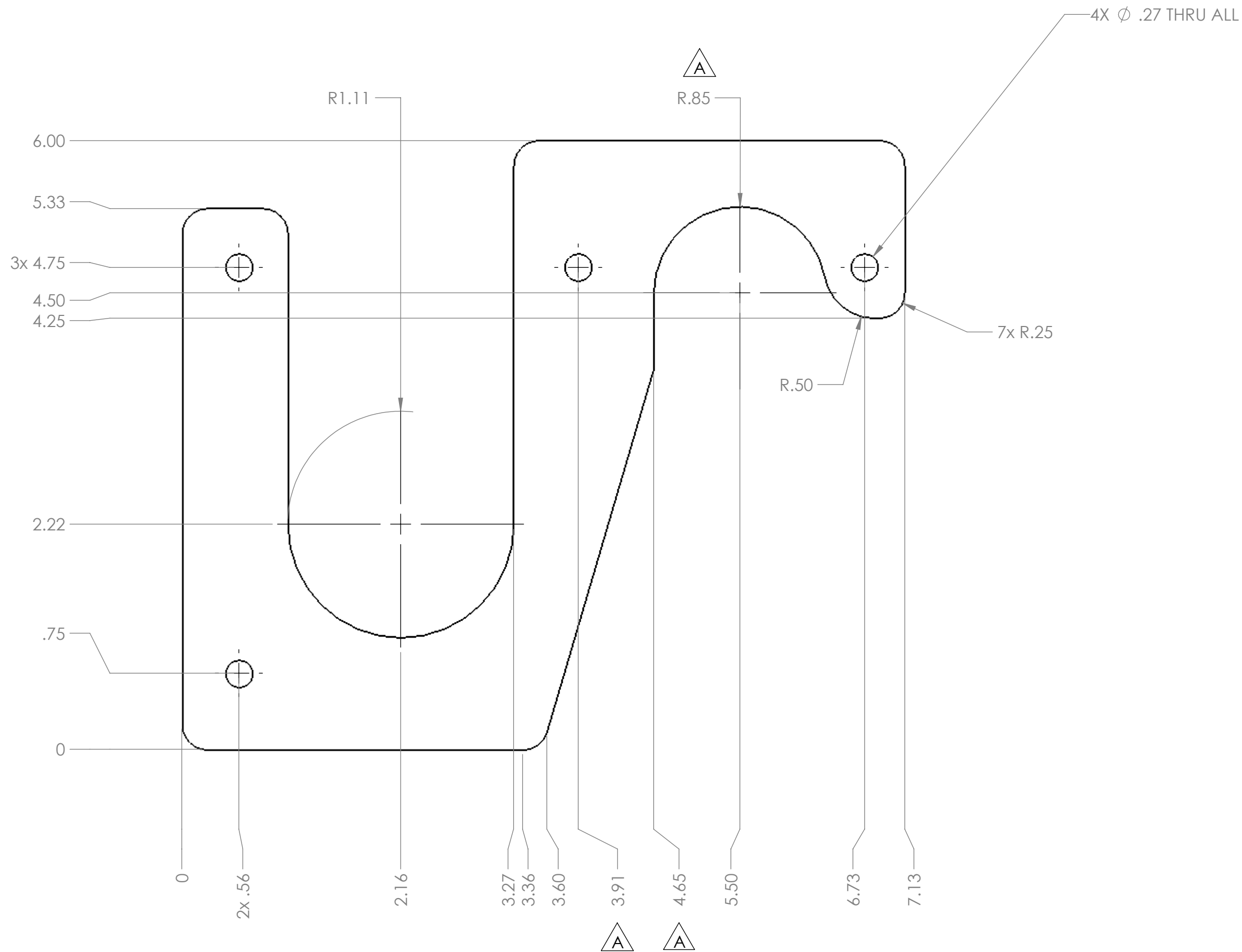


TITLE:
Low bar holder

SIZE	DWG. NO.	REV
C	GE-22111	A



SCALE: 1:4 SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3, D3	A	R .85 was R .83, 3.91 was 3.93, 4.65 was 4.67	11/18/2021	NTW

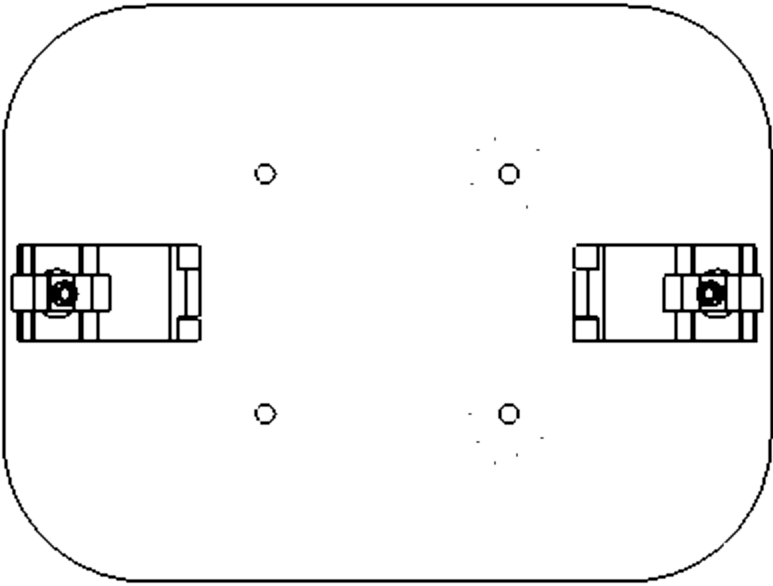
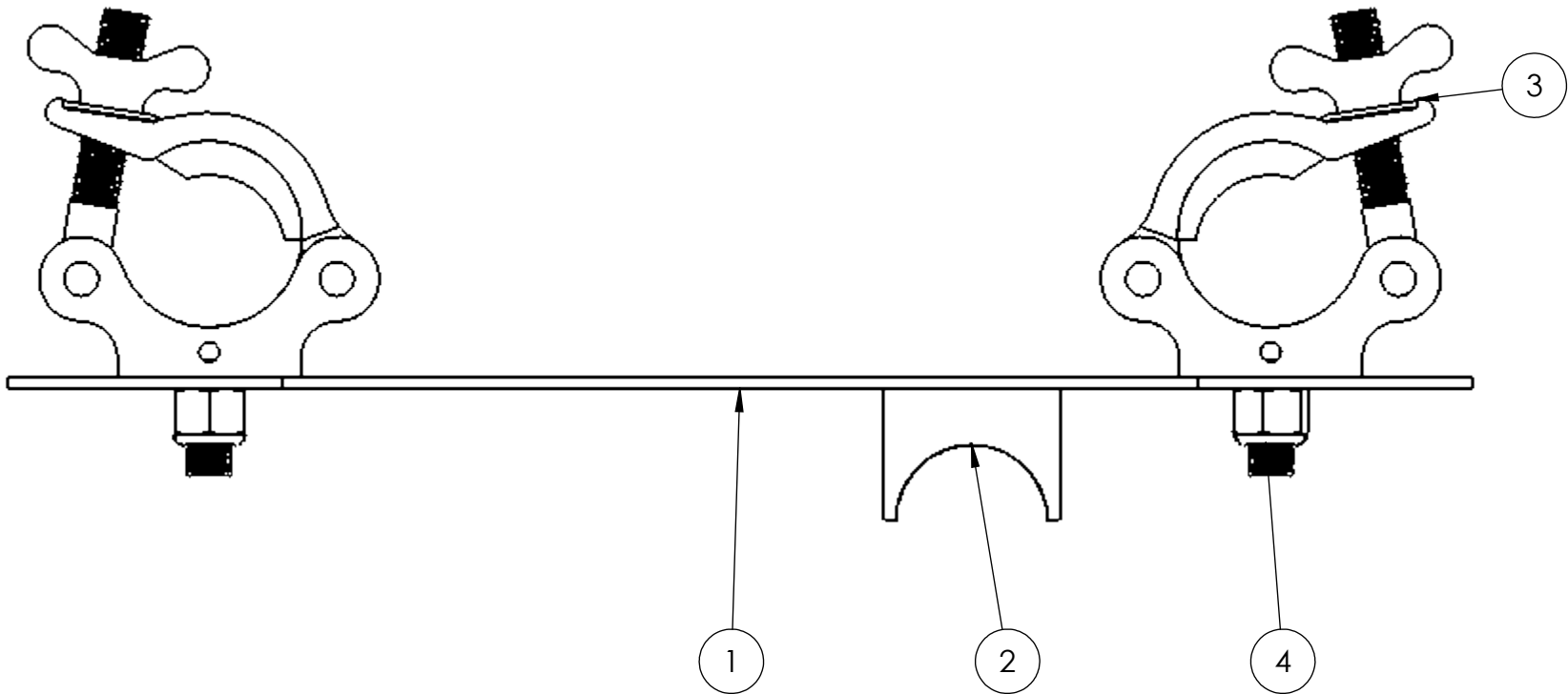


Notes:.
1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: 3/8" Polycarbonate, clear DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	NW	6/5/2020
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 			TITLE: Low bar clamp		
SIZE C	DWG. NO. GE-22112		REV A		
SCALE: 1:4			SHEET 1 OF 1		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22121	Under hung plate	1
2	GE-22123	Pipe Saddle	2
3	FE-01016	Cheeseborough for Truss _ Single	2
4	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	2



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

NW



3/4/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:

under hung assembly

SIZE

DWG. NO.

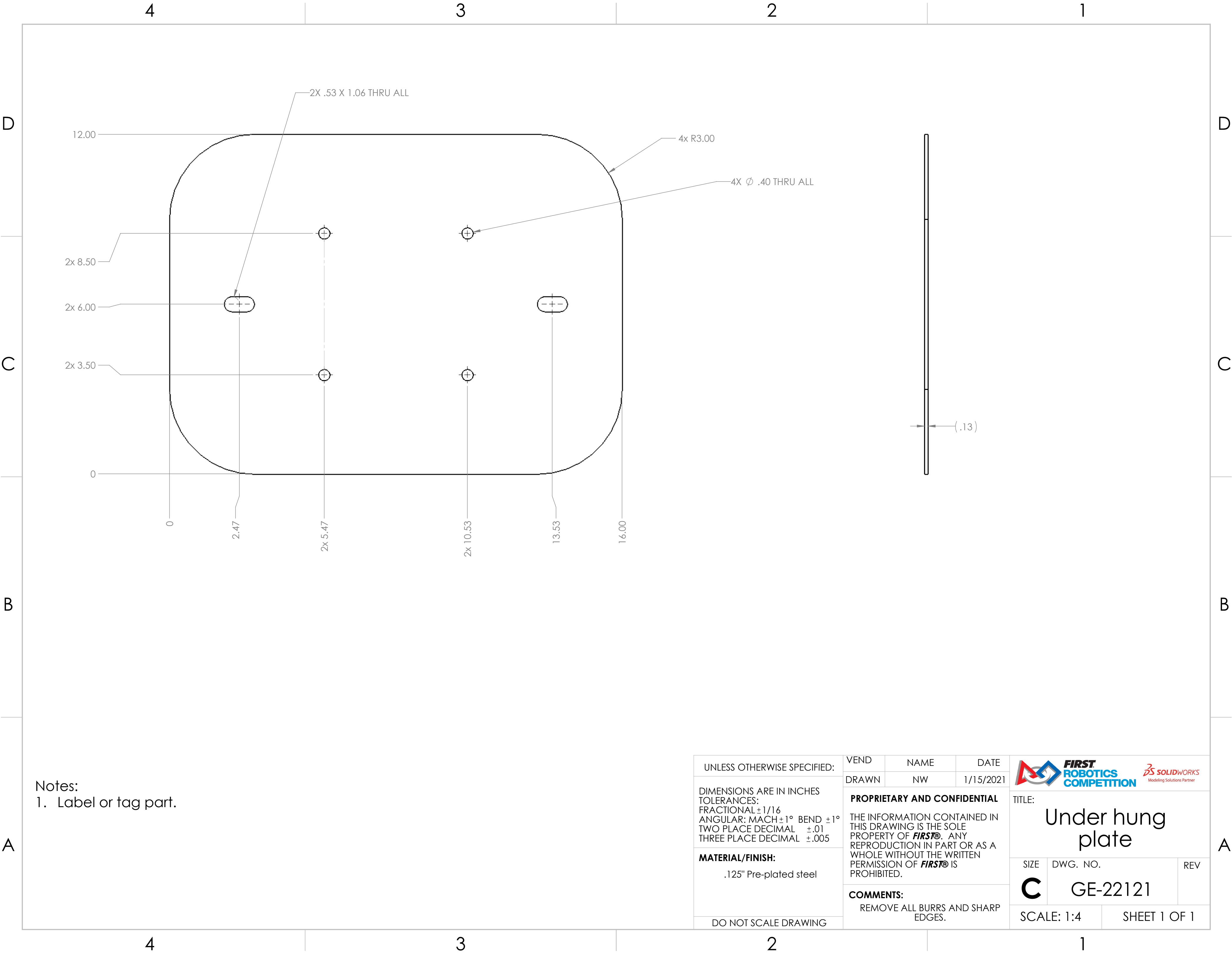
REV

C



GE-22120

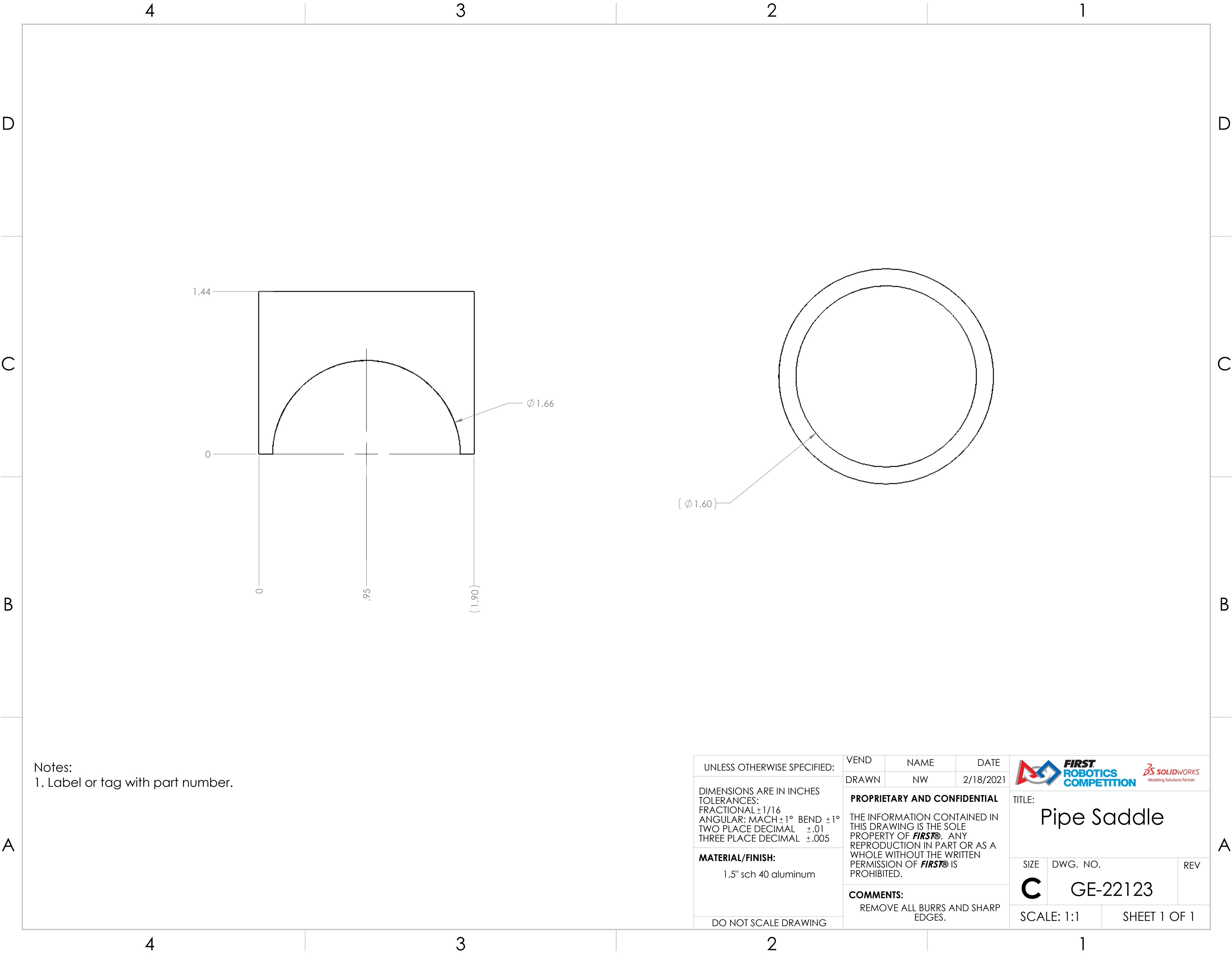
SCALE: 1:4

SHEET 1 OF 1





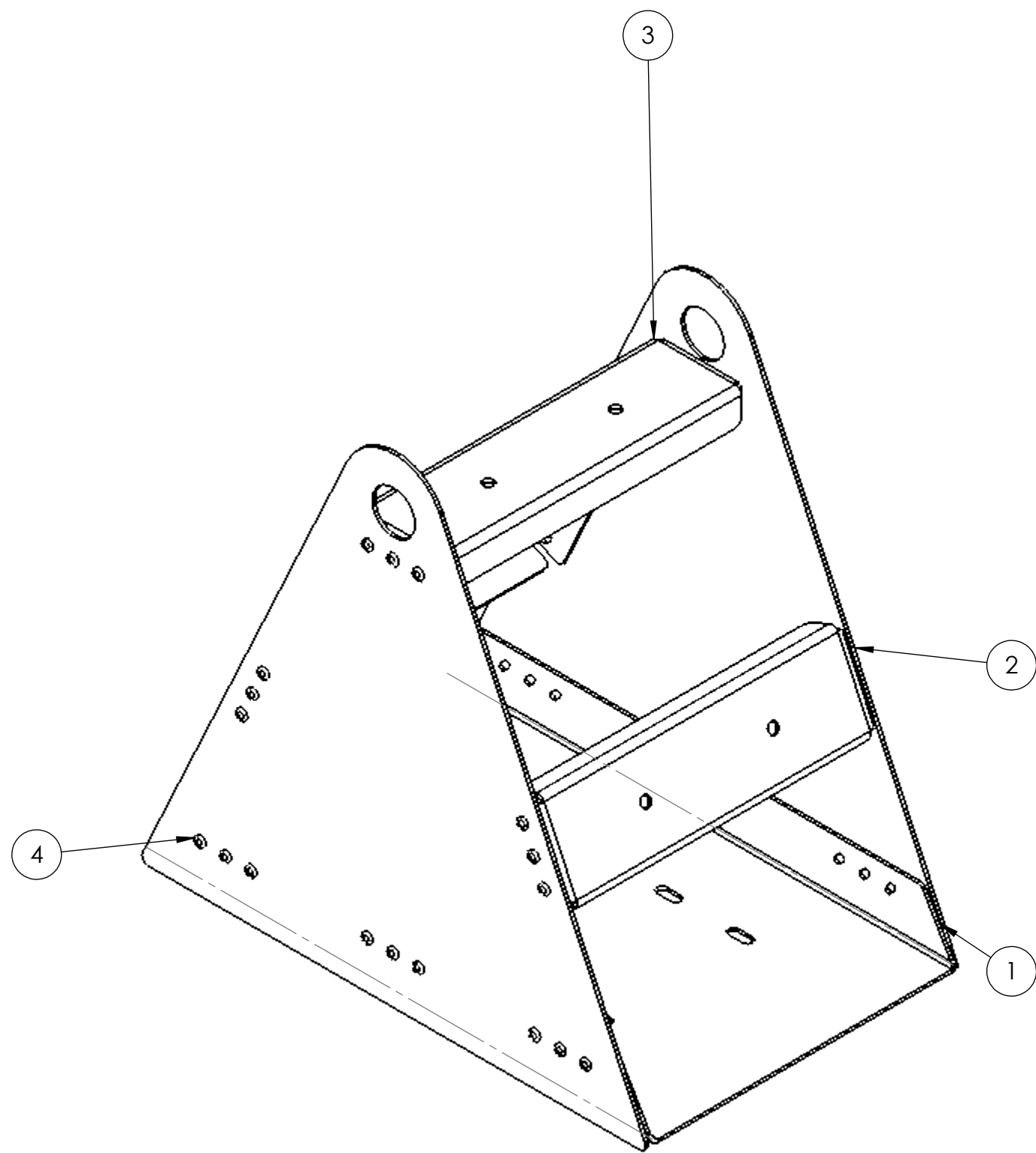
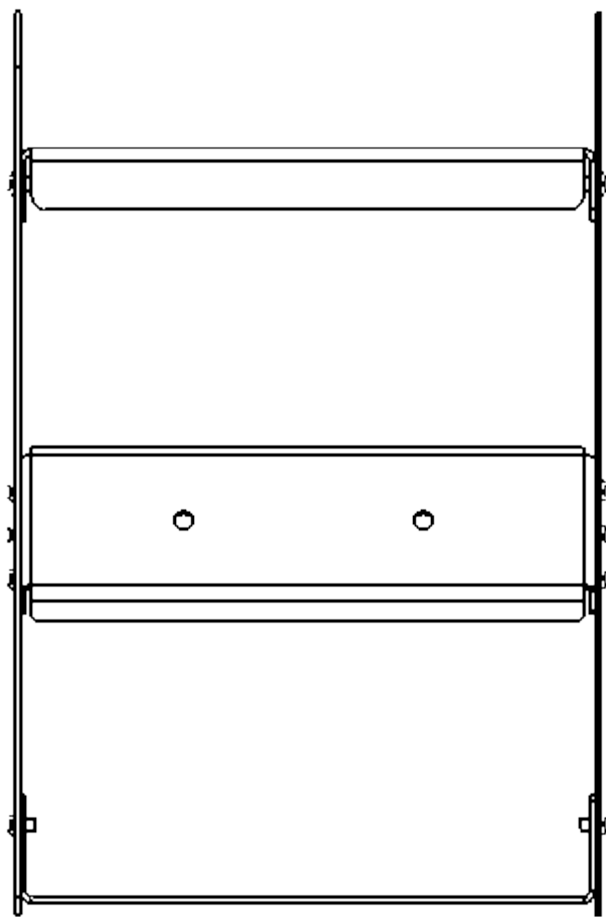
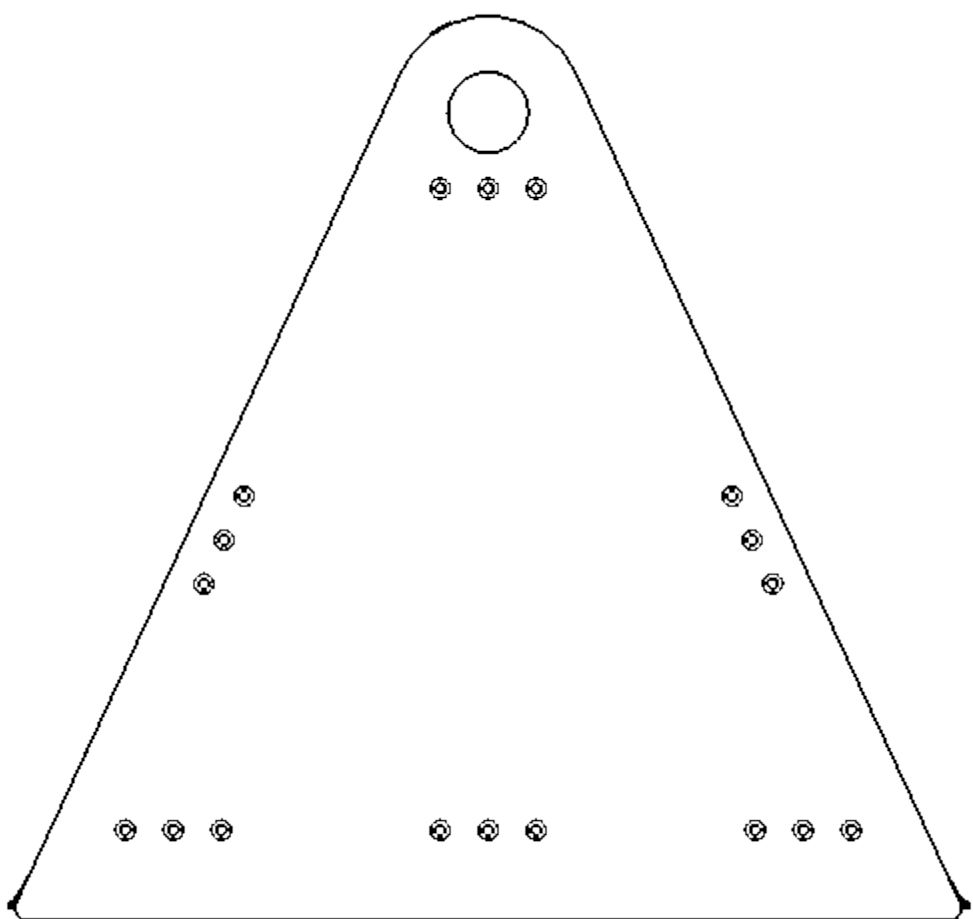
Notes:
1. Label or tag part.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Under hung plate</h1></div>		
	DRAWN	NW	1/15/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22121	
				SCALE: 1:4		SHEET 1 OF 1
MATERIAL/FINISH: .125" Pre-plated steel						
DO NOT SCALE DRAWING						





Notes:
1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 1.5" sch 40 aluminum DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Pipe Saddle</h1></div>		
	DRAWN	NW	2/18/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22123	REV
SCALE: 1:1		SHEET 1 OF 1				



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22131	upper bar base	1
2	GE-22132	High bar side plate	2
3	GE-22133	Upper holder cross	3
4	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	36

<div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005</div> <div>MATERIAL/FINISH:</div> <div>DO NOT SCALE DRAWING</div>	VEND	NAME	DATE	<div></div> <div>TITLE: Upper transition bar holder</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div><div>C</div><div>GE-22130</div><div>SCALE: 1:8</div><div>SHEET 1 OF 3</div></div>	
	DRAWN	NW	1/15/2021		
	<div>PROPRIETARY AND CONFIDENTIAL</div> <div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.</div>				
	<div>COMMENTS:</div> <div>REMOVE ALL BURRS AND SHARP EDGES.</div>				

D

D

C

C

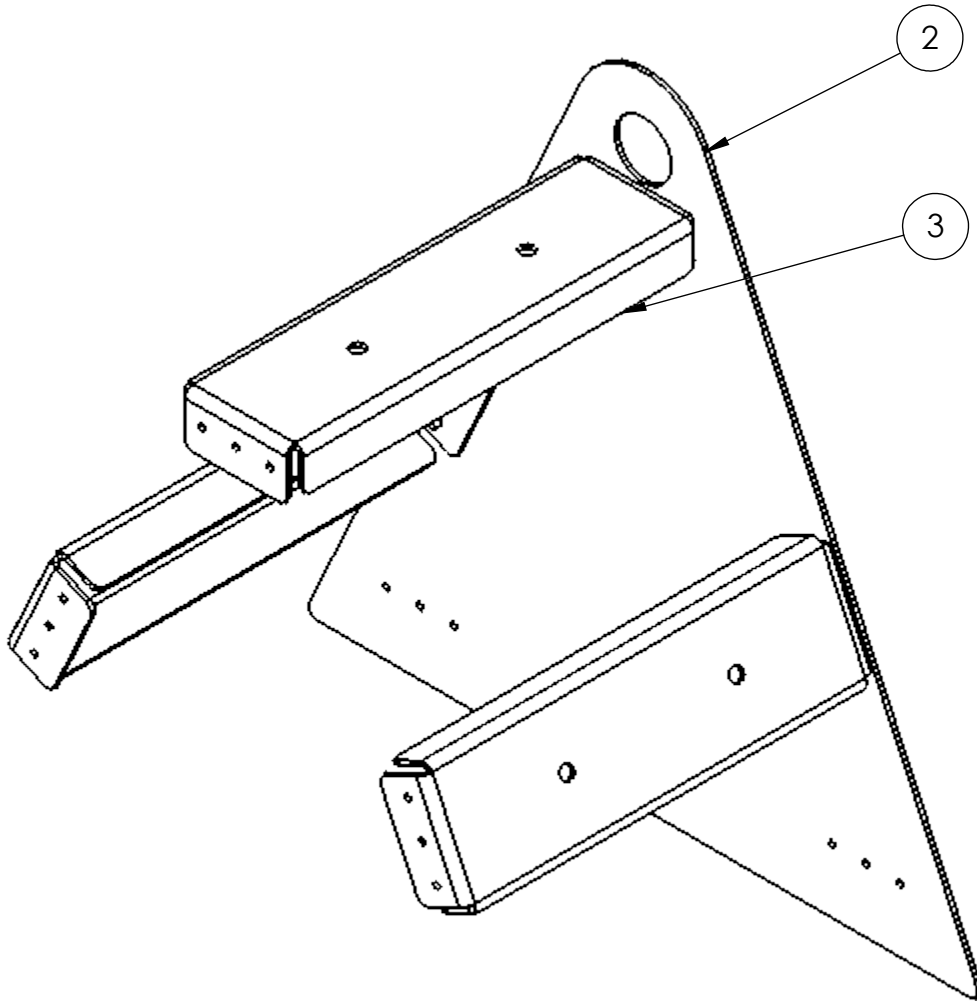
B

B

A

A

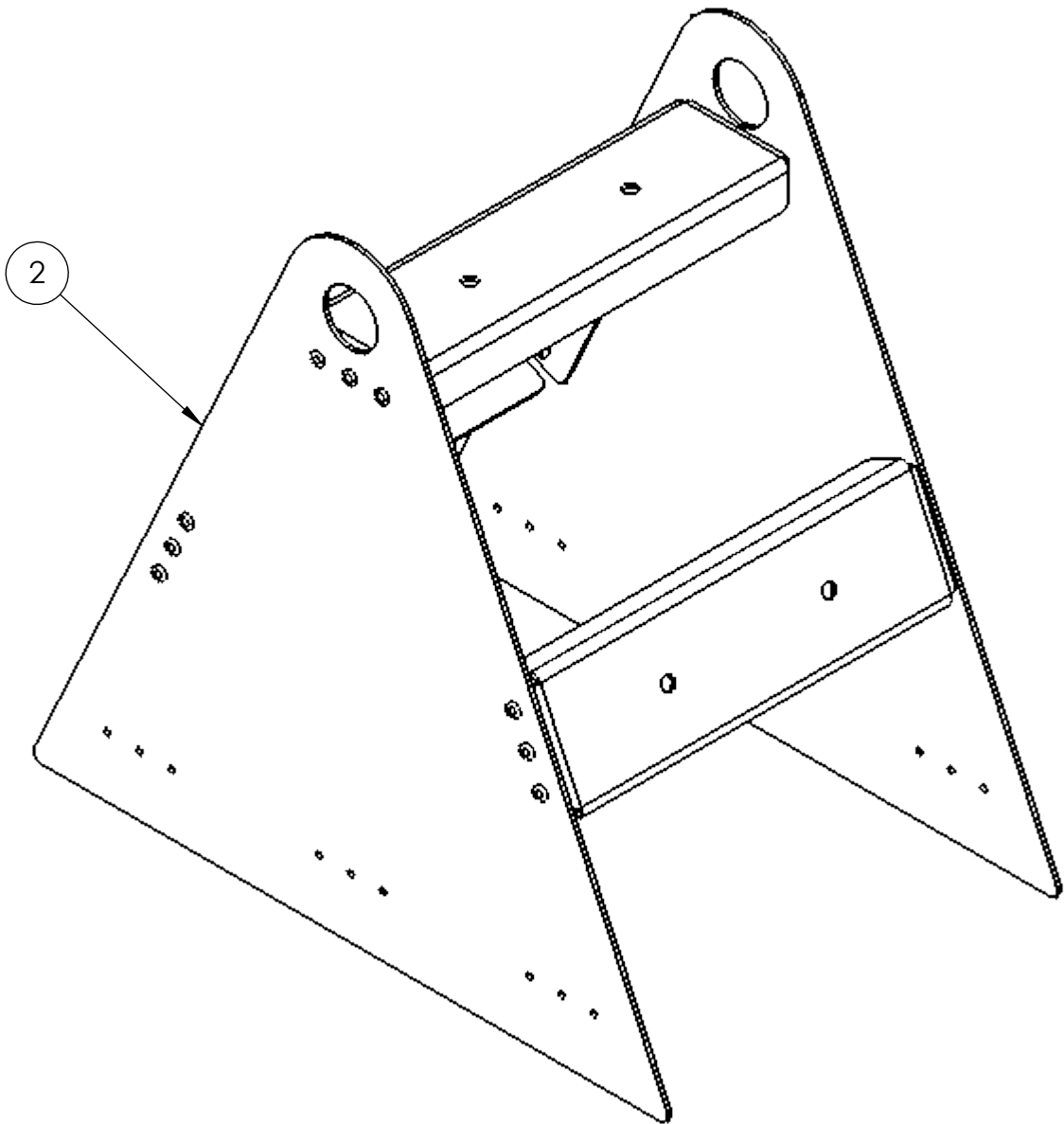
Step 1



Notes:



1. Rivet 3 to 2 with 3/16" steel rivets in three locations.

Step 2

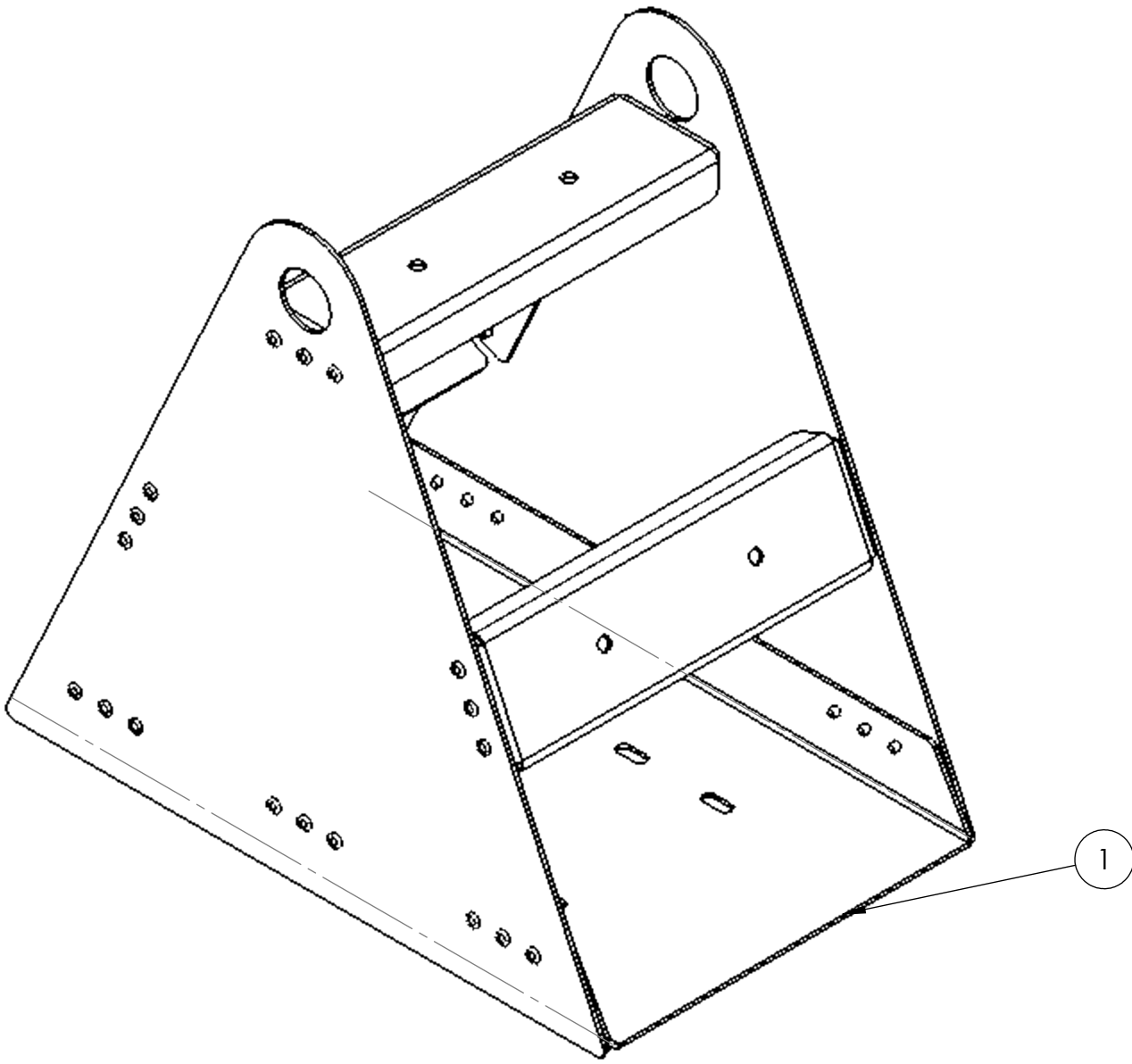


Notes:



1. Rivet 2 to step 1 with 3/16" steel rivets.

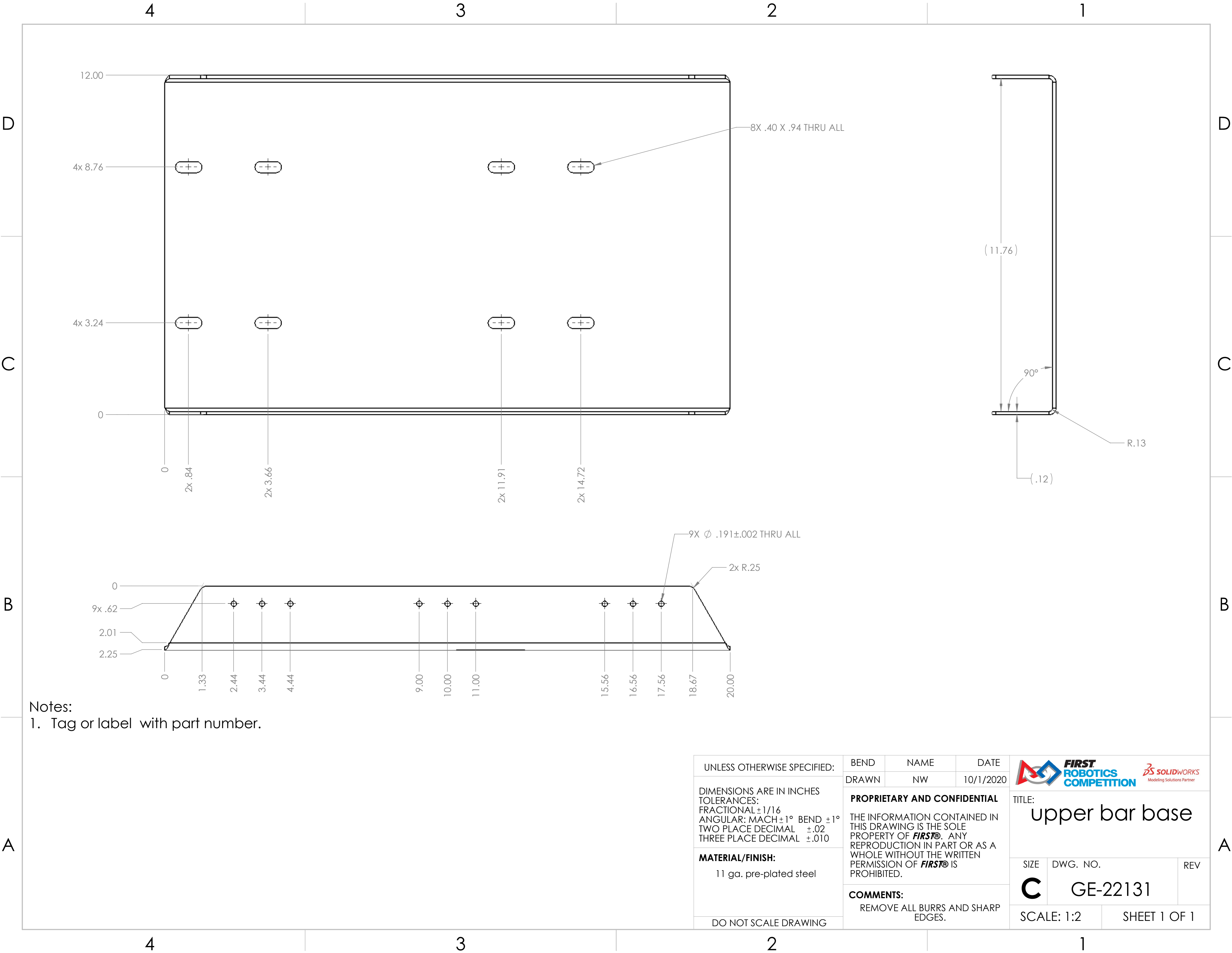
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	NW	1/15/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Upper transition bar holder	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
SIZE		DWG. NO.		REV	
C		GE-22130			
SCALE: 1:8			SHEET 2 OF 3		



Step 3:



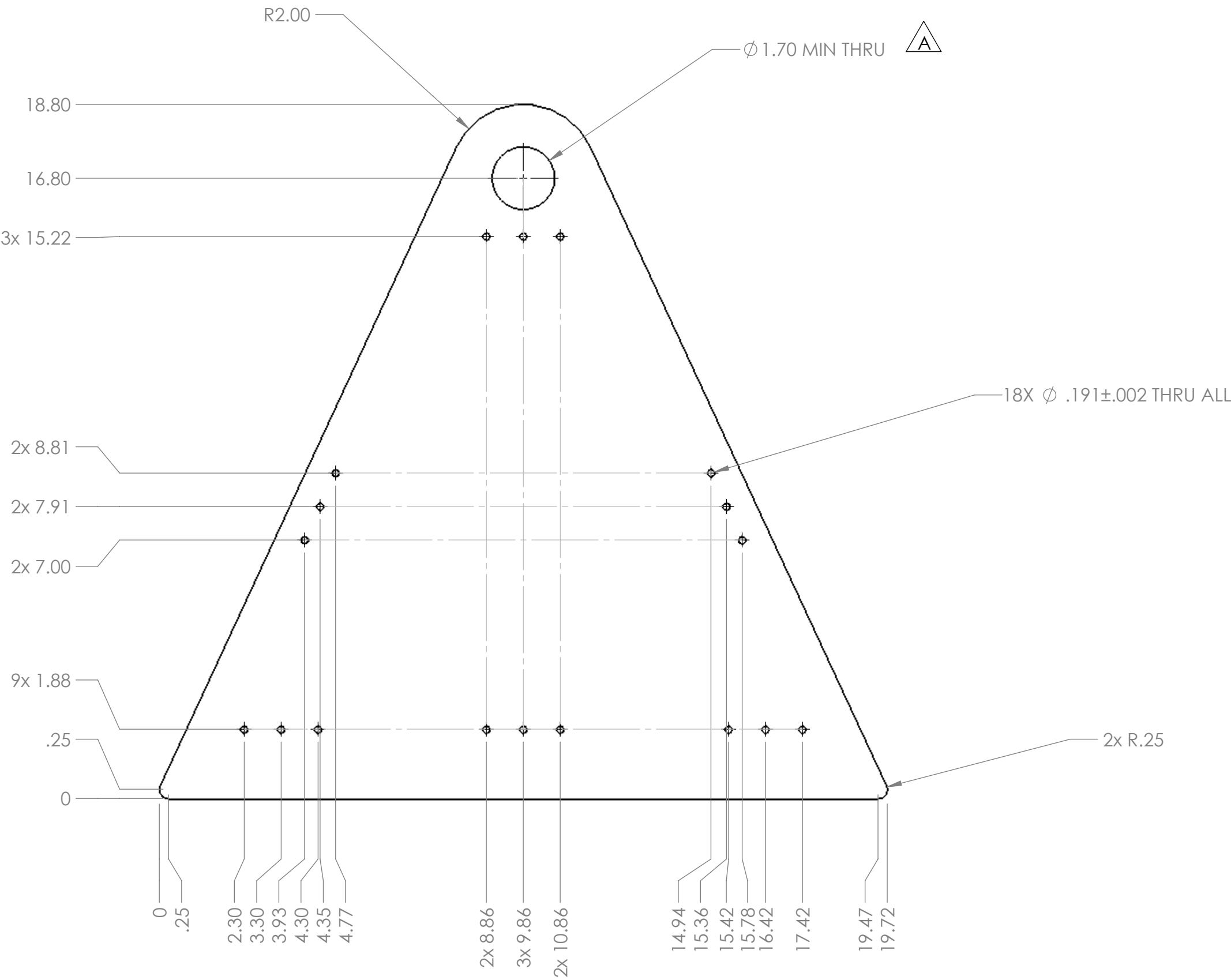
- Notes:
- 1. Rivet 1 to step 2 with 3/16 steel rivets.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: Upper transition bar holder</div></div>	
	DRAWN	NW	1/15/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.	
	COMMENTS:				
	MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			SIZE C
DO NOT SCALE DRAWING				SCALE: 1:8	REV SHEET 3 OF 3



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>	
	DRAWN	NW	10/1/2020		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			upper bar base	
	COMMENTS:			SIZE	
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.	
				REV	
11 ga. pre-plated steel				C	GE-22131
DO NOT SCALE DRAWING				SCALE: 1:2	
				SHEET 1 OF 1	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D3	A	1.7" was 1.68"	11/18/2021	NTW



Notes:
1. Tag or label part with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

11 ga., Pre-plated steel
sheet

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	NW	9/30/2020

PROPRIETARY AND CONFIDENTIAL

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REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF **FIRST®** IS
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.

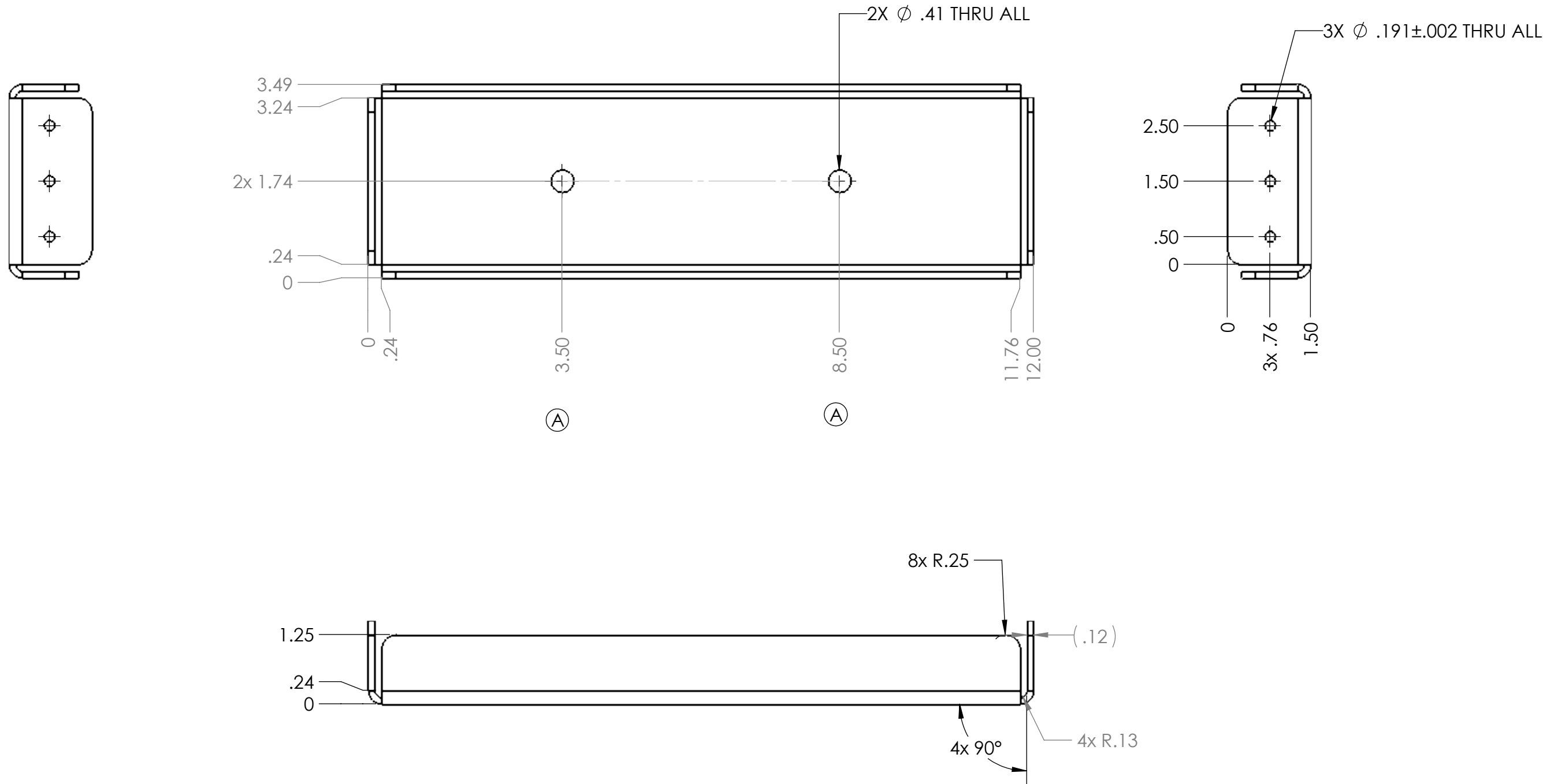


TITLE:
**High bar side
plate**



SIZE	DWG. NO.	REV
C	GE-22132	A

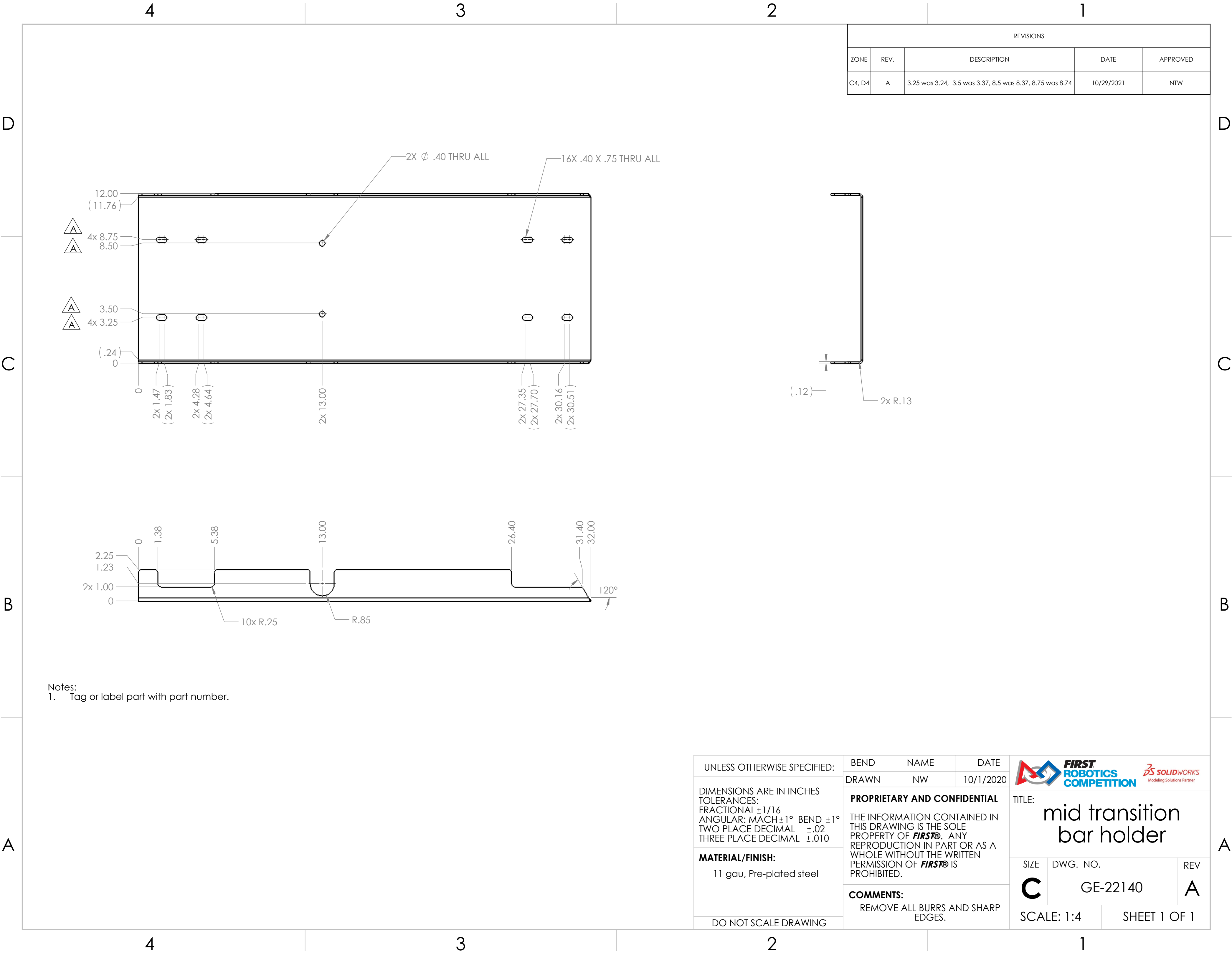
SCALE: 1:8 SHEET 1 OF 1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	3.50 was 3.41 and 8.50 was 8.41	10/27/2021	NTW





Notes
1. Tag or label part with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 11 ga. pre-plated steel DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <h1>Upper holder cross</h1></div>		
	DRAWN	NW	10/1/2020			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22133	A
				SCALE: 1:2		SHEET 1 OF 1

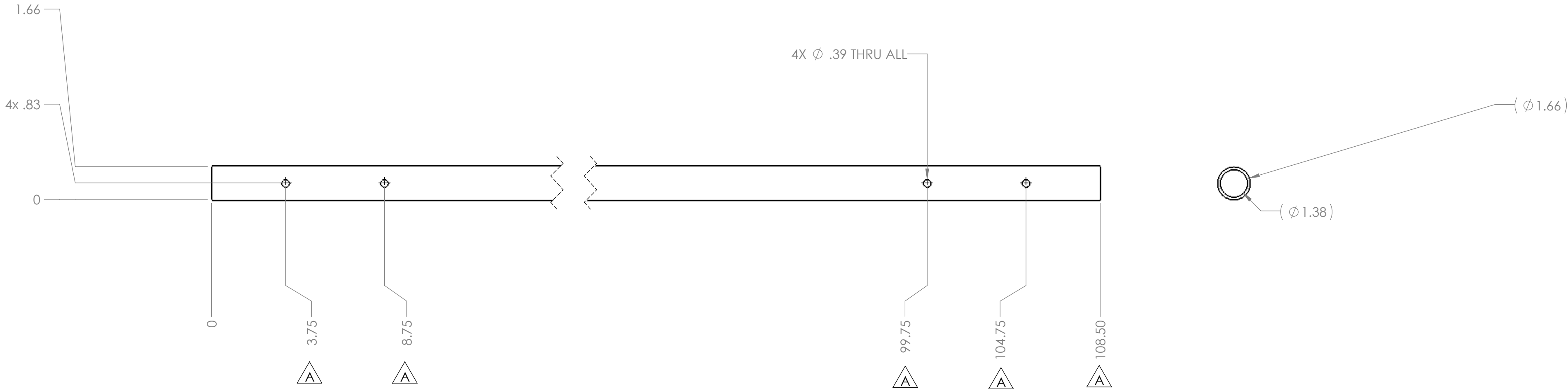


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C4, D4	A	3.25 was 3.24, 3.5 was 3.37, 8.5 was 8.37, 8.75 was 8.74	10/29/2021	NTW

Notes:
1. Tag or label part with part number.



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	NW	10/1/2020			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: mid transition bar holder		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 11 gau, Pre-plated steel	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22140	A
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, B4	A	Addition 0.5" added to overall length. Holes moved to center new length.	9/2/2021	NTW



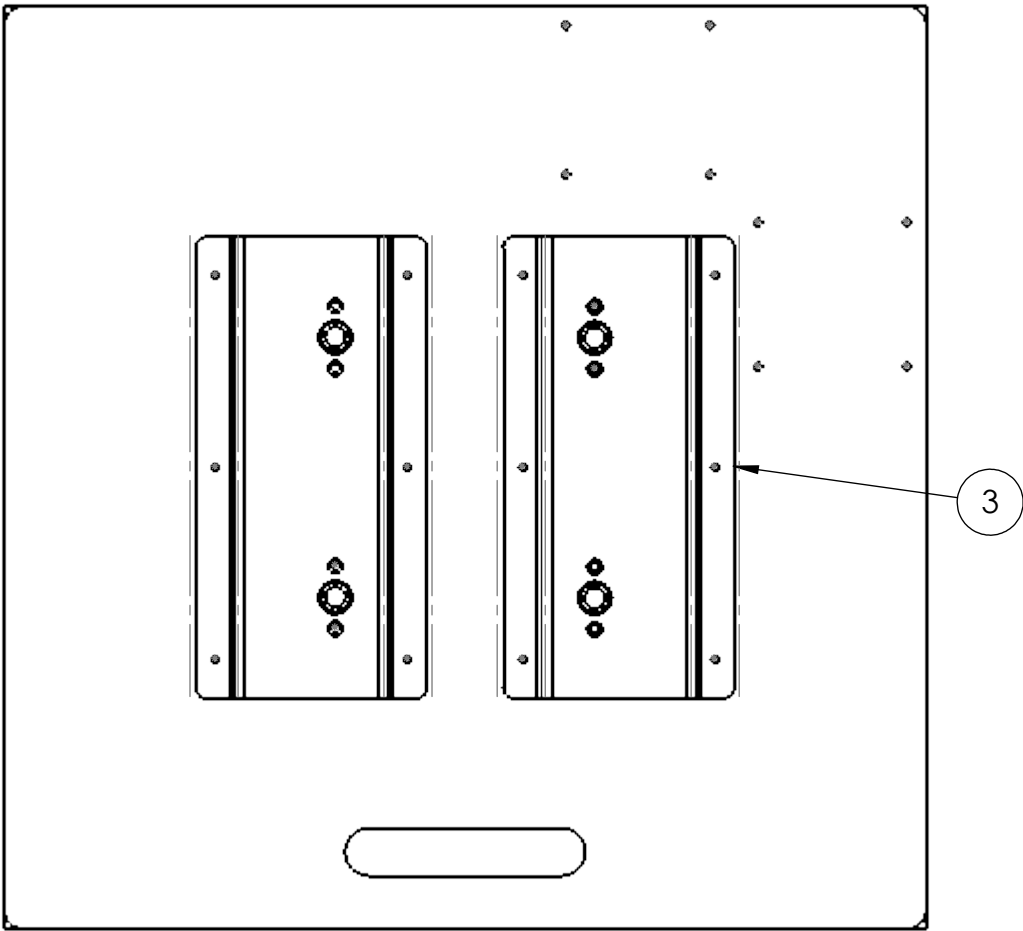
Notes:

1. Tag or label part with part number.

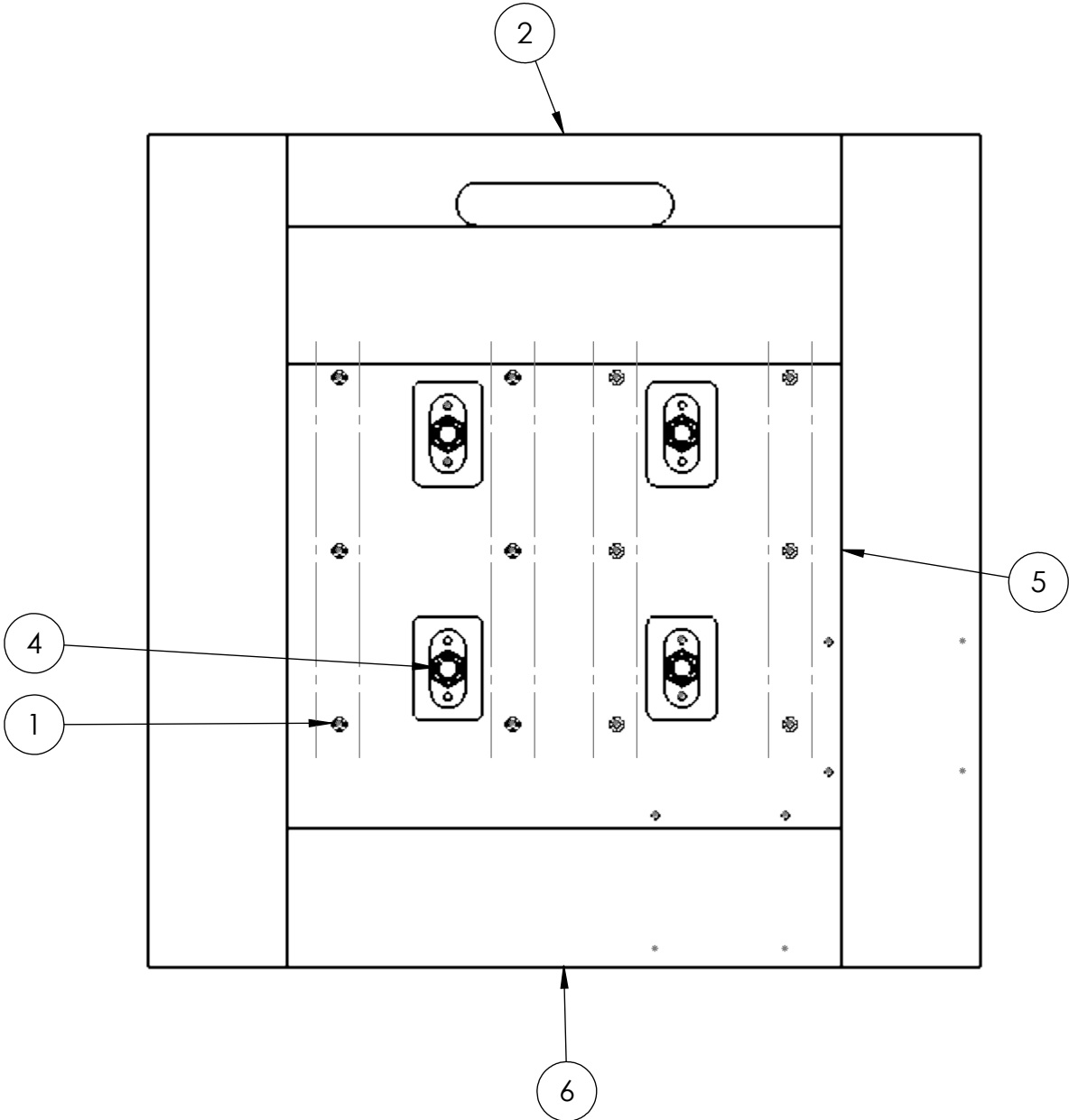
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	Part Number		Color
				GE-22150-RED	Bengal Red 49/33333	
				GE-22150-BLU	Mercury Blue 59/40653	
				GE-22150-BLK	Bengal Black 49/88888	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	DRAWN	NW	6/3/2020	<div></div>		
MATERIAL/FINISH: 1.25" SCH 40 pipe steel, Powder coated	PROPRIETARY AND CONFIDENTIAL			TITLE: Rung		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22150	A
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	12
2	GE-20030 - 01	Truss Base - Sheet Metal Assembly, Base Plate	1
3	GE-20030 - 02	Truss Base - Sheet Metal Assembly, Truss Feet	2
4	nut_chassis_.625_11	Nut, Chassis, 5/8-11	4
5	Hook_4_24	4" x 24" Hook, Adhesive Backed	2
6	Hook_4_16	4" x 16" Hook, Adhesive Backed	2





Top

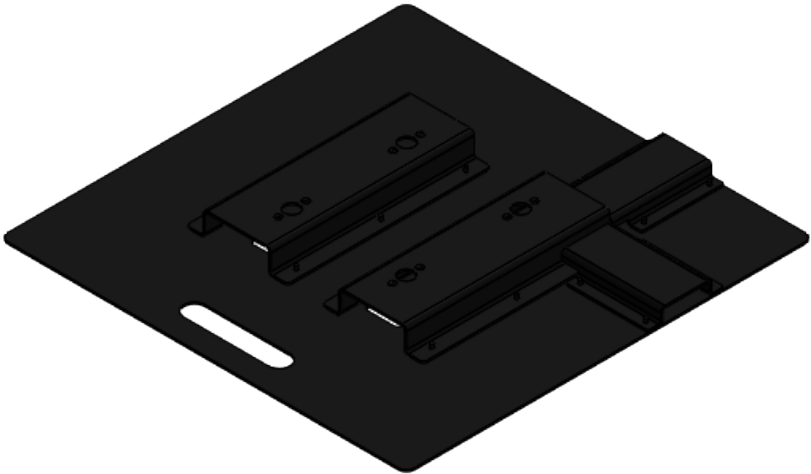
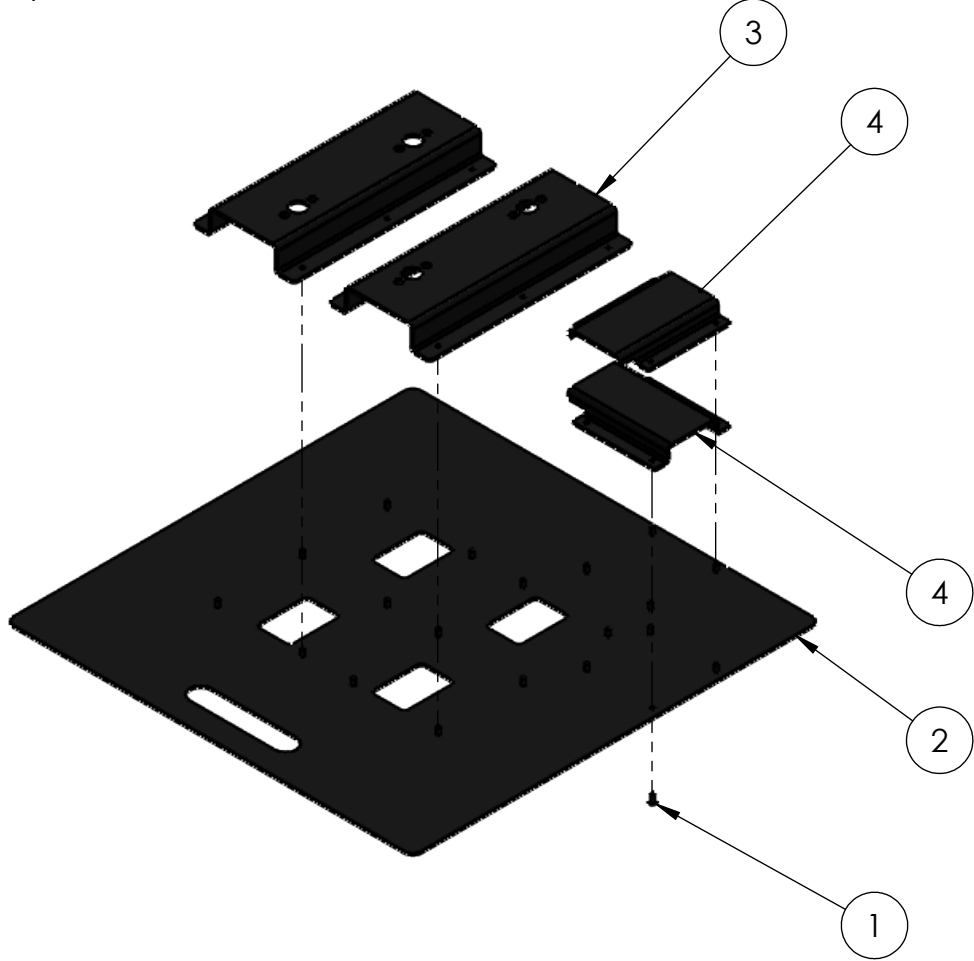


Bottom

- Notes:
- 1. Made from part GE-20030.
 - 2. Remove parts GE-20030-03 from assembly.
 - 3. Attach 4 .
 - 4. Place 6 and 5 or replace missing.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$ MATERIAL/FINISH: DO NOT SCALE DRAWING	FIELD	NAME	DATE	<div><div></div><div></div></div> <div>TITLE: Truss Base - Sheet Metal Assembly</div>		
	DRAWN	NW	1/4/2022			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22170	
SCALE: 1:5		SHEET 1 OF 1				



Exploded View:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	20
2	GE-20030 - 01	Truss Base - Sheet Metal Assembly, Base Plate	1
3	GE-20030 - 02	Truss Base - Sheet Metal Assembly, Truss Feet	2
4	GE-20030 - 03	Truss Base - Sheet Metal Assembly, Berm - Red	2

- Notes:
1. Rivets should be plated or stainless steel
 2. Tag or label with part number.
 3. Powder Coated Black (Full Assembly).

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/9/19	TITLE: Truss Base - Sheet Metal Assembly		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01						
		THREE PLACE DECIMAL ±.001						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV B GE-20030 0		
		MATERIAL	COMMENTS:					
			WEIGHT: 24.93 LBS					
NEXT ASSY	USED ON	FINISH POWDER COAT BLACK						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 1 OF 2		

4

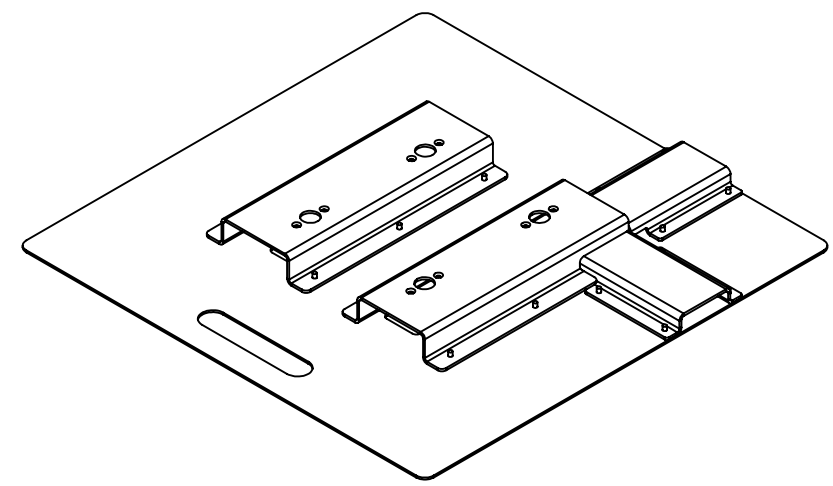
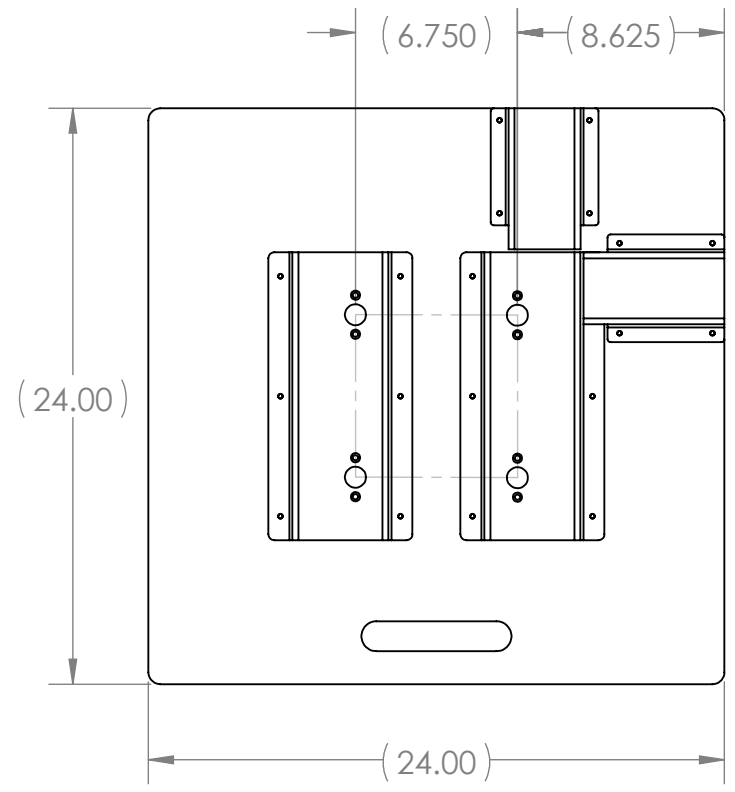
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2

1

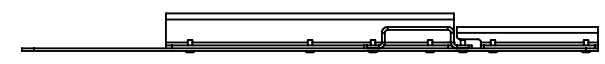
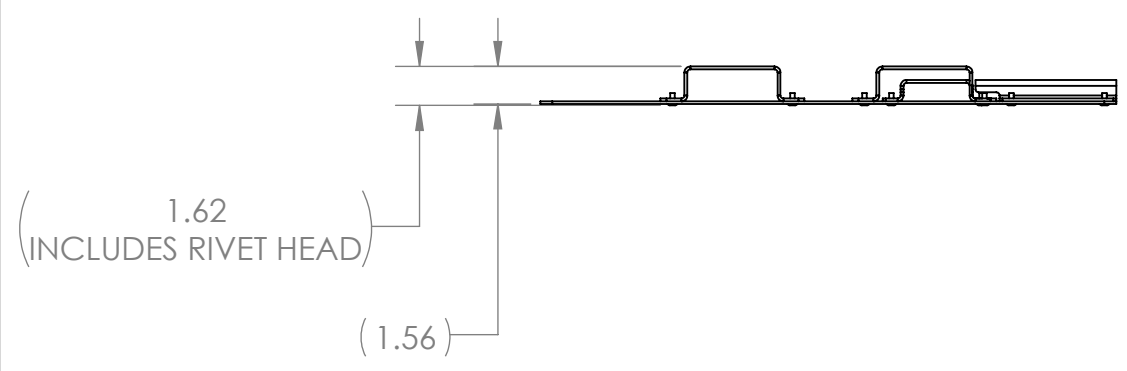
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DIMENSIONS SHOWN FOR REFERENCE

PROPRIETARY AND CONFIDENTIAL
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE: Truss Base - Sheet Metal Assembly		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV B GE-20030 0		
		MATERIAL	COMMENTS:					
		FINISH POWDER COAT BLACK	WEIGHT: 24.93 LBS					
NEXT ASSY	USED ON					SCALE: 1:8 WEIGHT: SHEET 2 OF 2		
APPLICATION		DO NOT SCALE DRAWING						

4

3

2

1

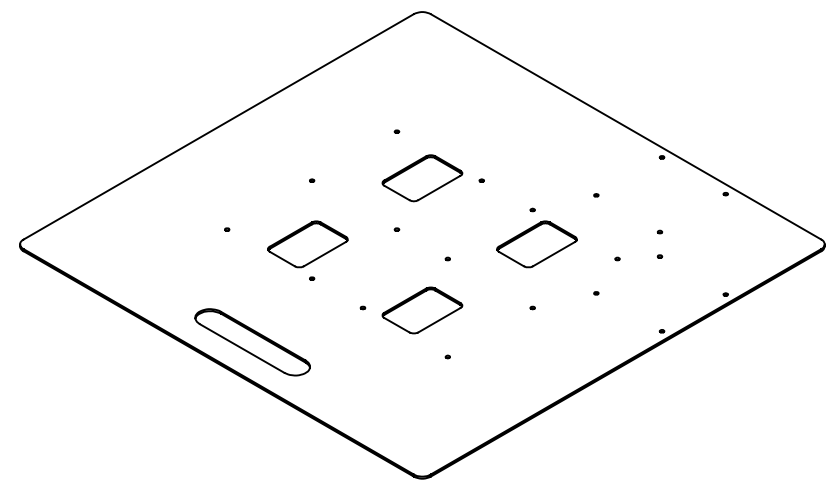
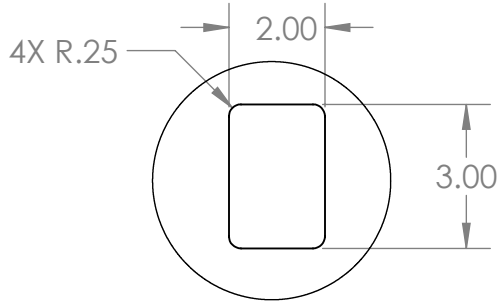
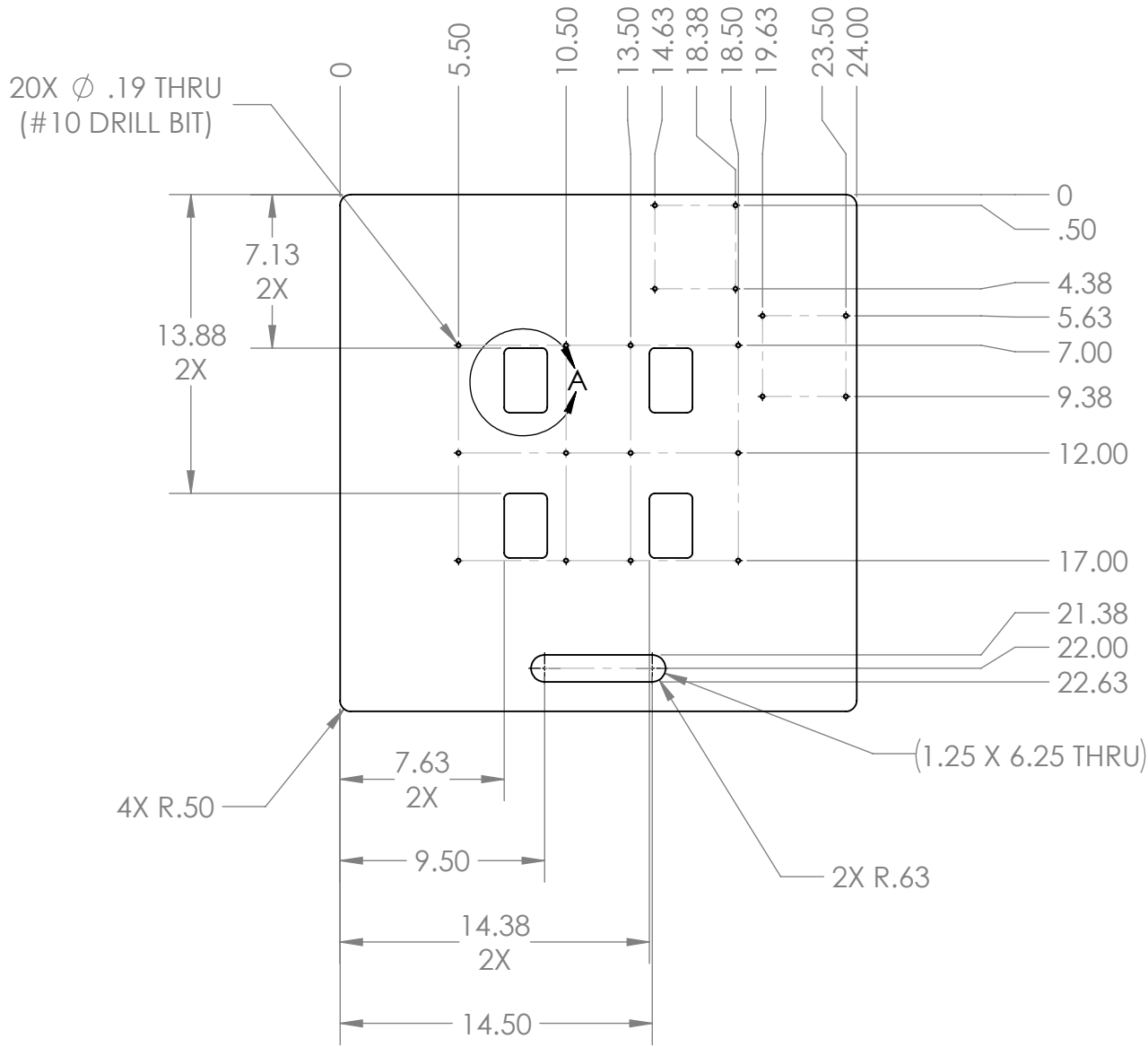
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B



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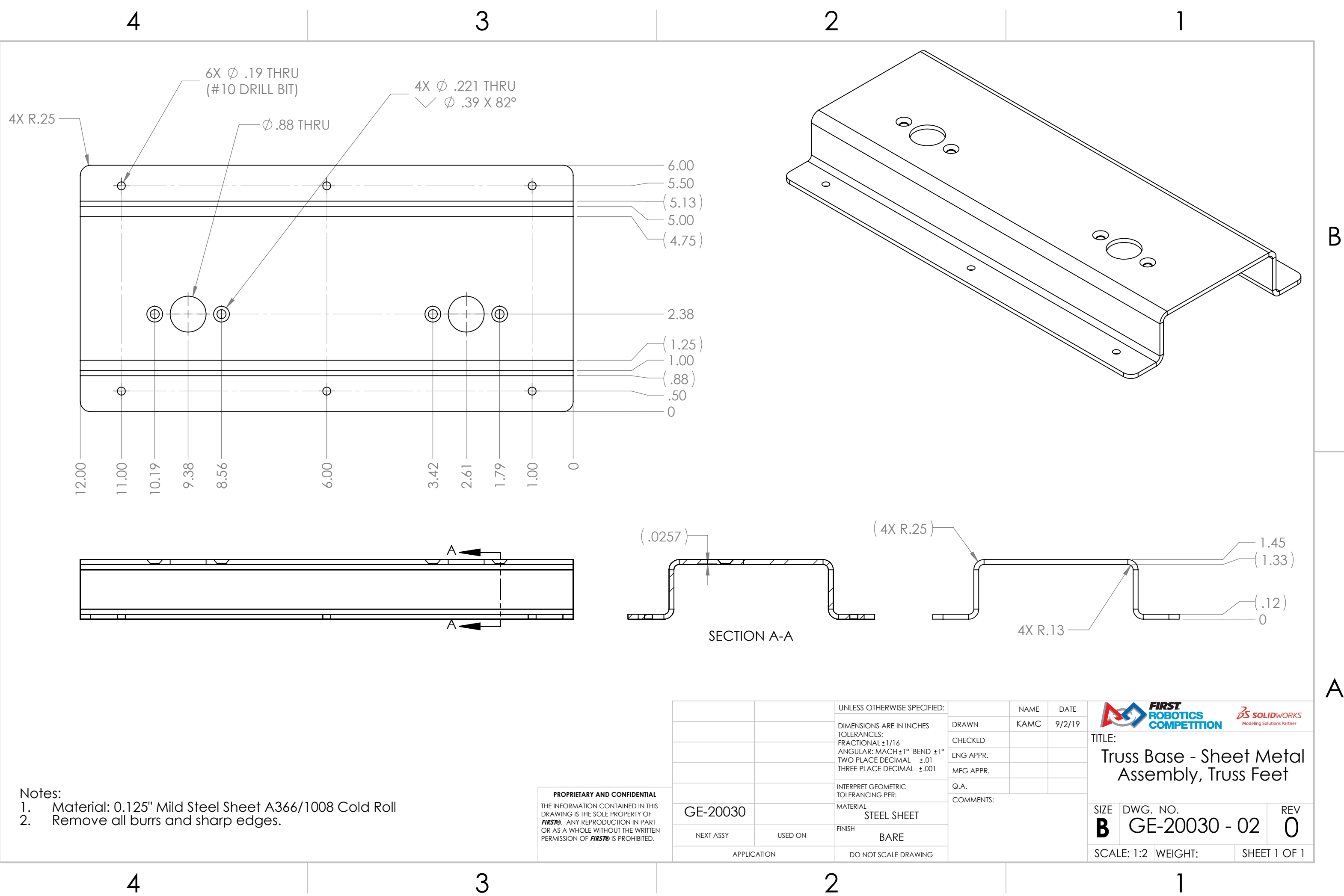


- Notes:
1. Material: 12 Ga. (0.105") Mild Steel Sheet A366/1008 Cold Roll
 2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE: Truss Base - Sheet Metal Assembly, Base Plate			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:			
GE-20030		MATERIAL STEEL SHEET							
NEXT ASSY	USED ON	FINISH BARE							
APPLICATION		DO NOT SCALE DRAWING							
			SIZE B	DWG. NO. GE-20030 - 01	REV 0	SCALE: 1:8 WEIGHT: SHEET 1 OF 1			

4 3 2 1



4

3

2

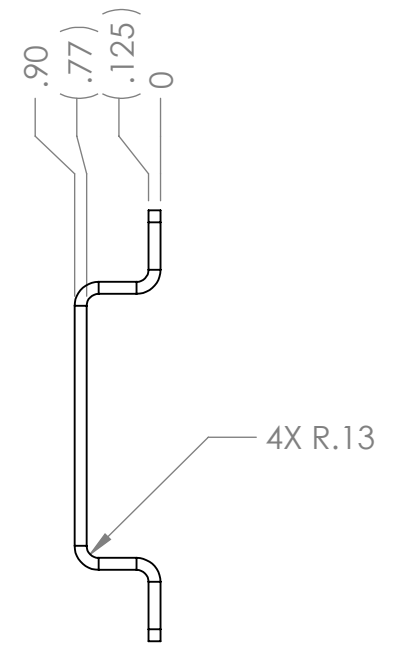
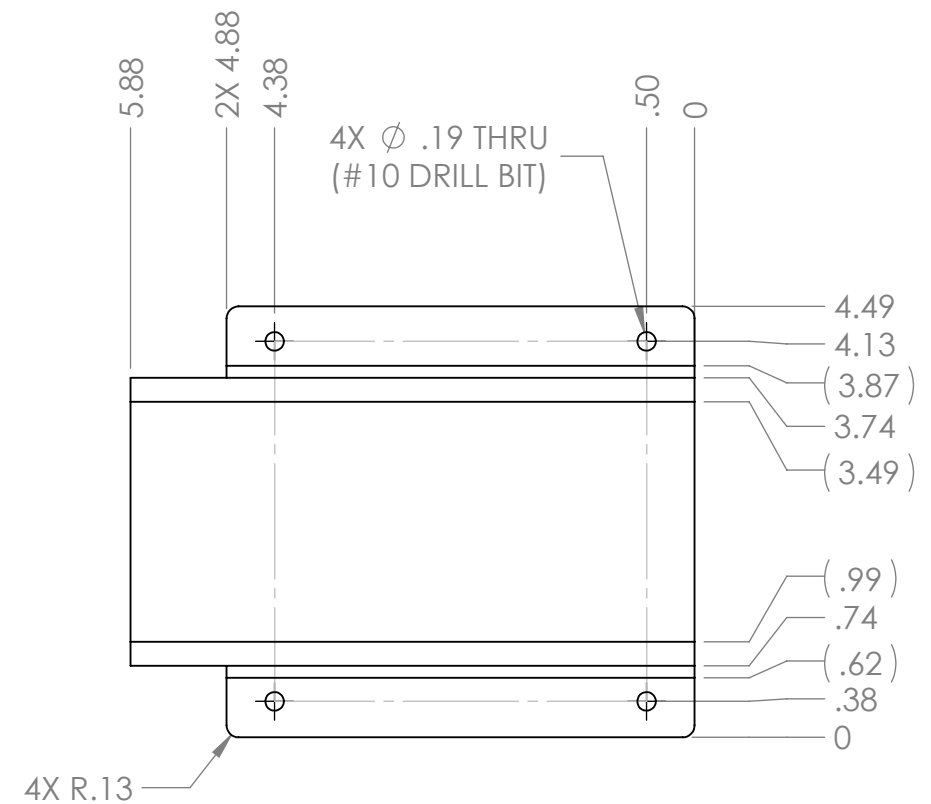
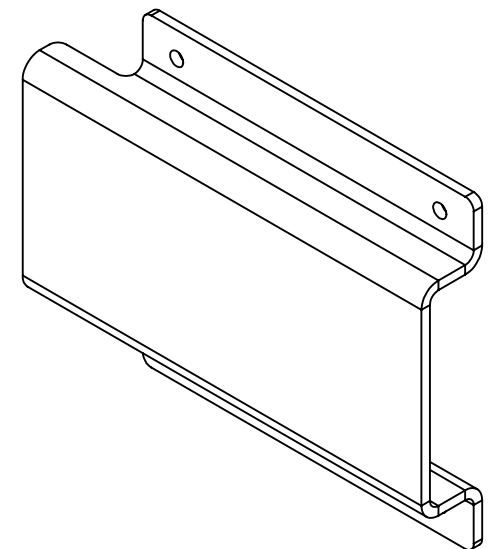
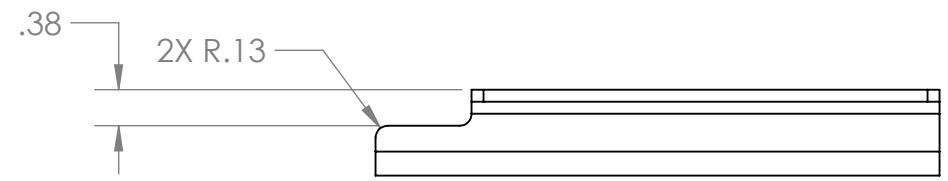
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B

A



B

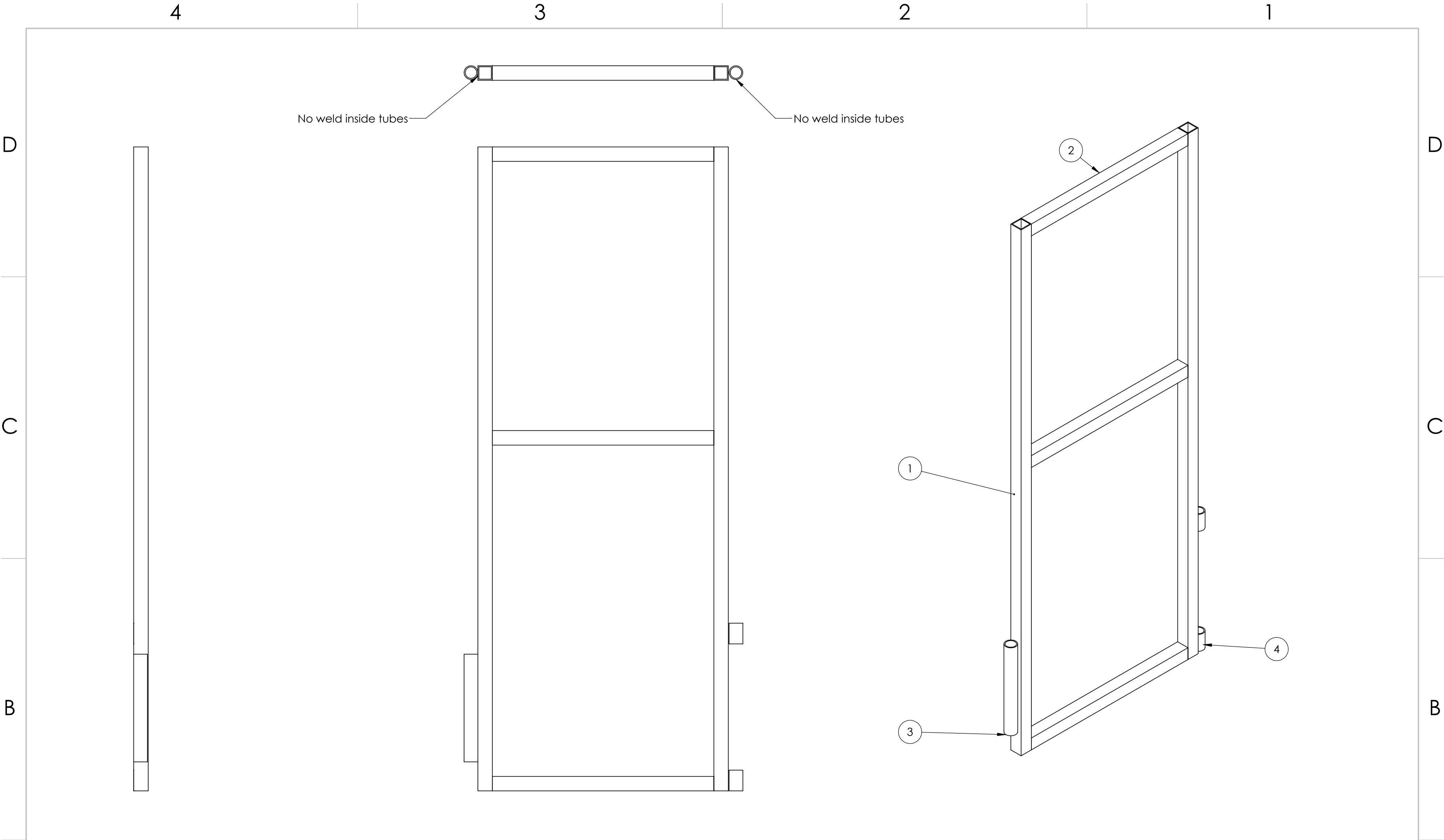
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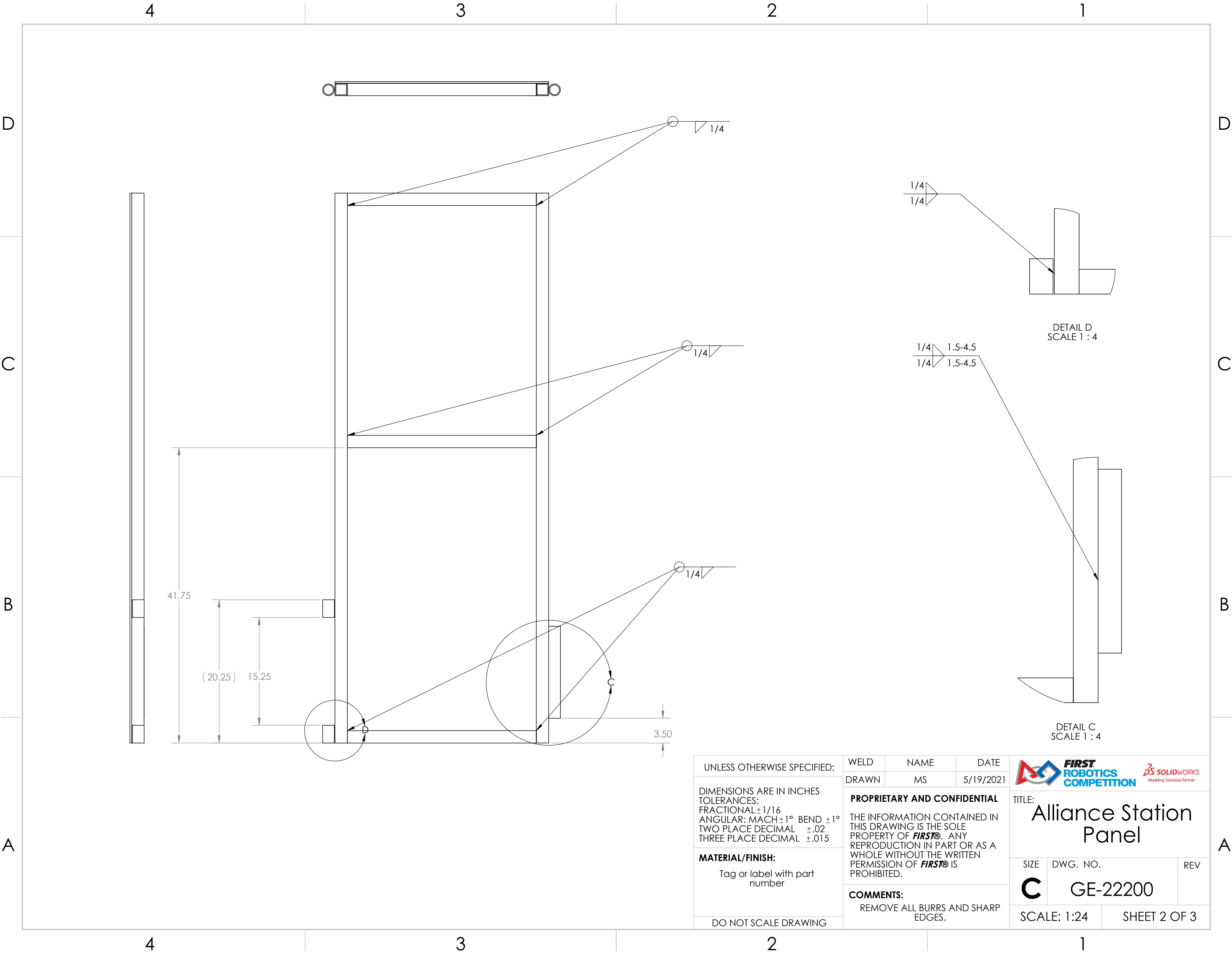
- Notes:
- Material: 0.125" Mild Steel Sheet A366/1008 Cold Roll
 - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE: Truss Base - Sheet Metal Assembly, Berm		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV B GE-20030 - 03 0		
GE-20030		MATERIAL SHEET STEEL	COMMENTS:					
NEXT ASSY	USED ON	FINISH BARE				SCALE: 1:2 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	UNLESS OTHERWISE SPECIFIED:			WELD	NAME	DATE	<div><div></div><div></div></div> <div>TITLE: Alliance Station Panel</div>			
1	GE-22200-01	1.75 x 1.75 x 77.75 6061 Aluminum Tube	2	DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	DRAWN	MS	5/19/2021	PROPRIETARY AND CONFIDENTIAL					
2	GE-22200-02	1.75 x 1.75 x 26.75 6061 Aluminum Tube	3		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.								
3	GE-22200-03	1.25 6061 Schedule 40 Alluminium Pipe	1		MATERIAL/FINISH: Tag or label with part number								
4	GE-22200-04	1.25 6061 Schedule 40 Alluminumn Pipe	2	DO NOT SCALE DRAWING			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV	
										C	GE-22200		
										SCALE: 1:10		SHEET 1 OF 3	



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

WELD	NAME	DATE
DRAWN	MS	5/19/2021

PROPRIETARY AND CONFIDENTIAL
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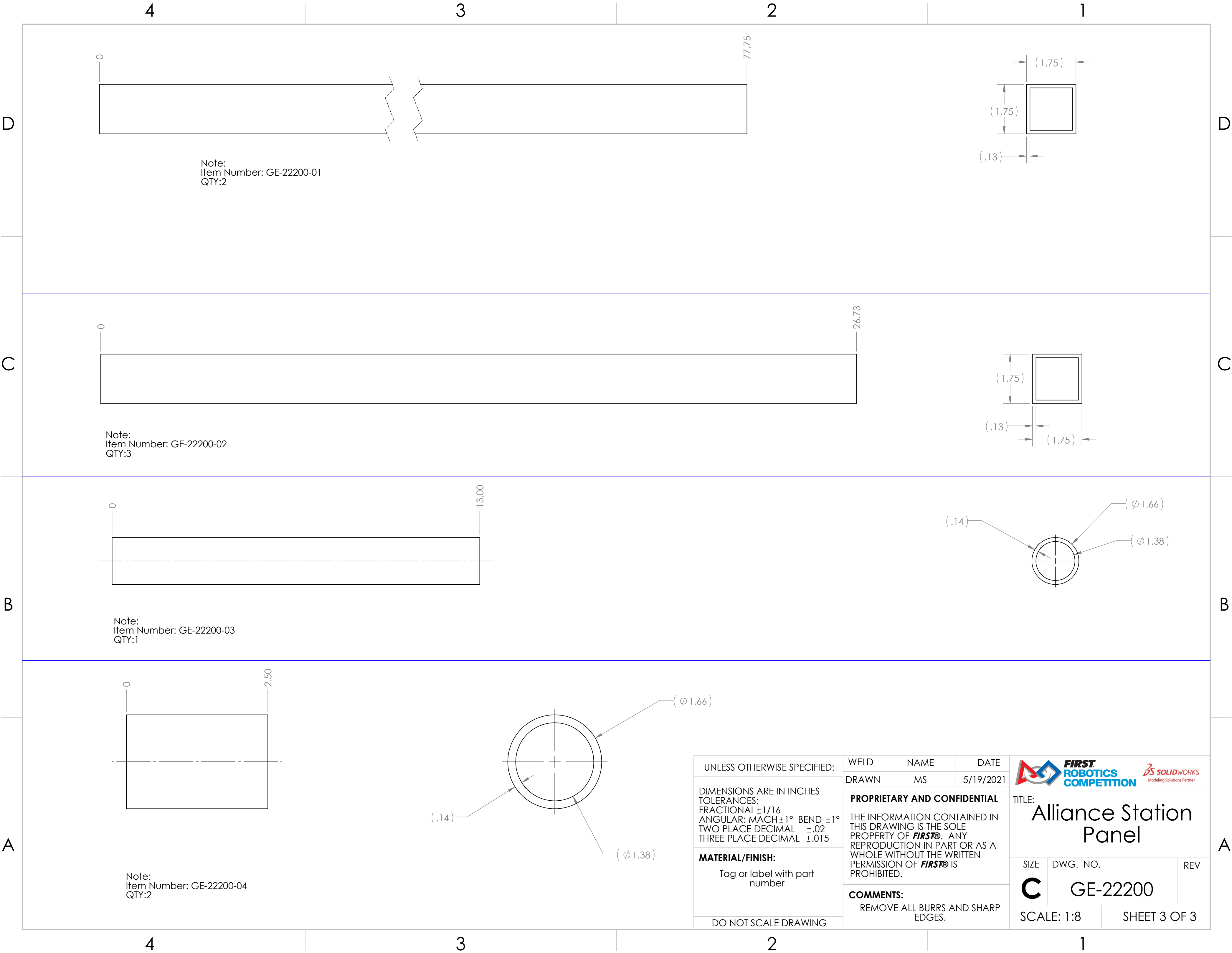
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

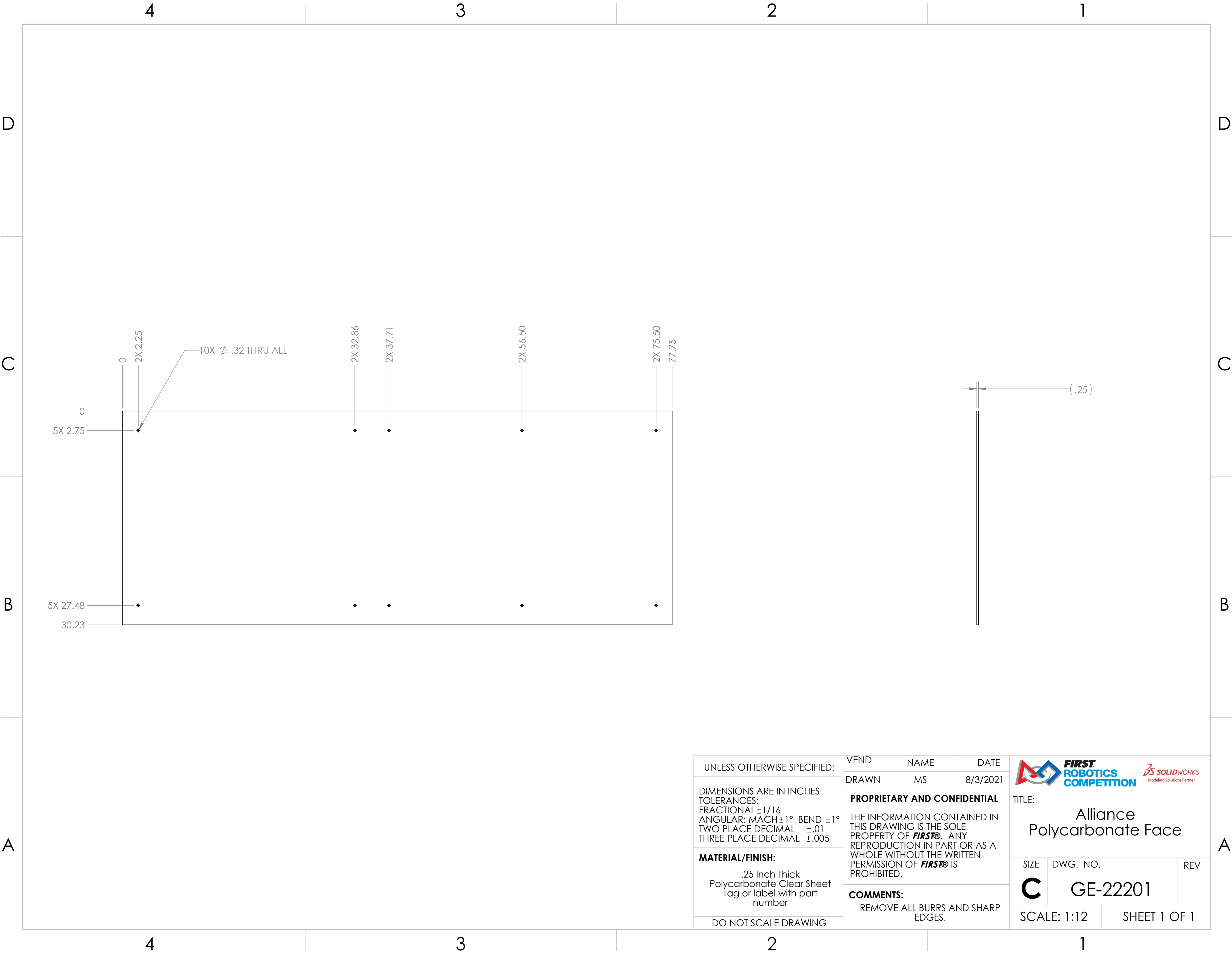




TITLE:
Alliance Station Panel

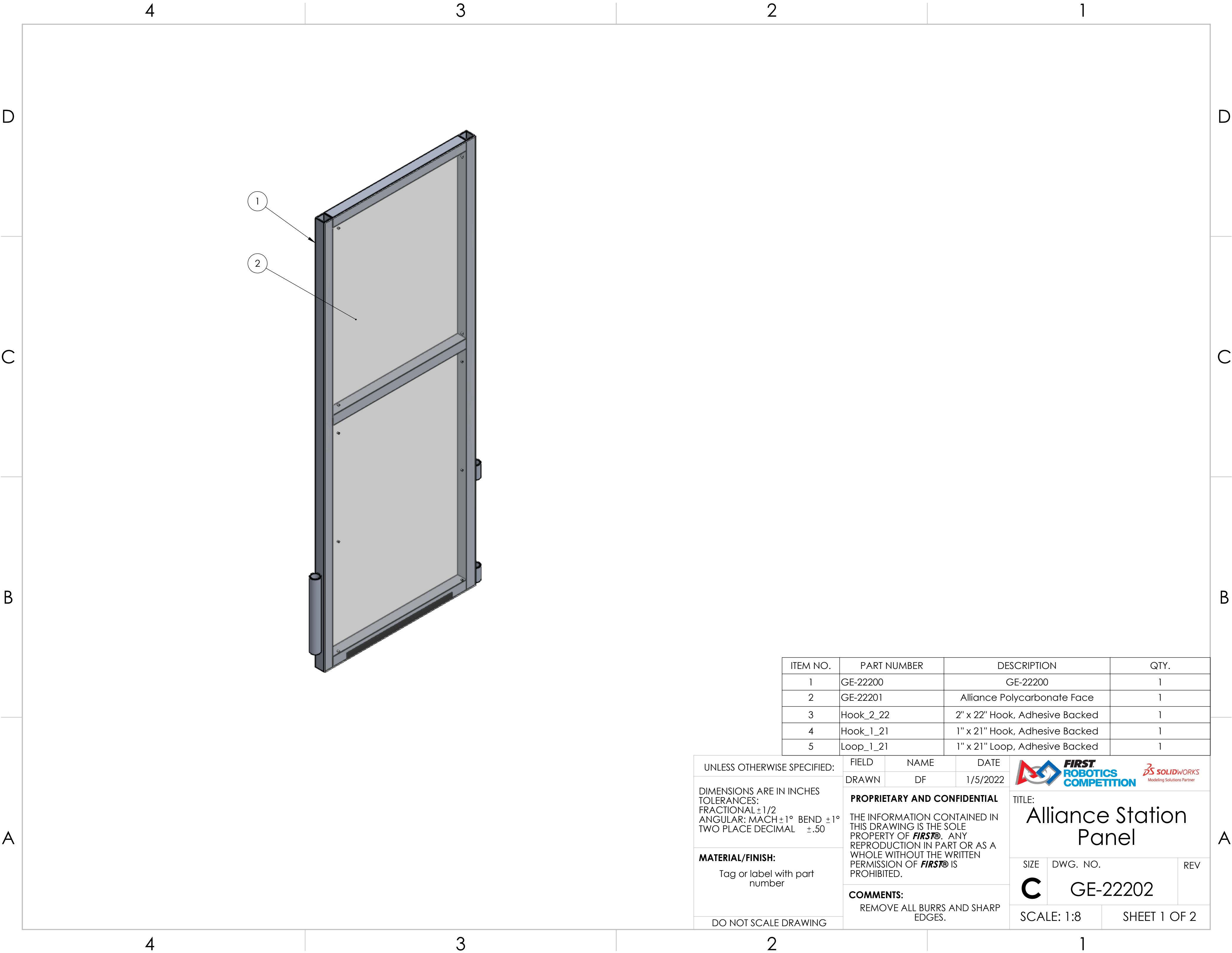
SIZE	DWG. NO.	REV
C	GE-22200	

SCALE: 1:24 SHEET 2 OF 3







UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	MS	8/3/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE: Alliance Polycarbonate Face		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: .25 Inch Thick Polycarbonate Clear Sheet Tag or label with part number	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22201	
DO NOT SCALE DRAWING				SCALE: 1:12		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22200	GE-22200	1
2	GE-22201	Alliance Polycarbonate Face	1
3	Hook_2_22	2" x 22" Hook, Adhesive Backed	1
4	Hook_1_21	1" x 21" Hook, Adhesive Backed	1
5	Loop_1_21	1" x 21" Loop, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	DF	1/5/2022	TITLE: Alliance Station Panel	
MATERIAL/FINISH: Tag or label with part number	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.	
DO NOT SCALE DRAWING				C	GE-22202
				SCALE: 1:8	
				SHEET 1 OF 2	
				REV	

4

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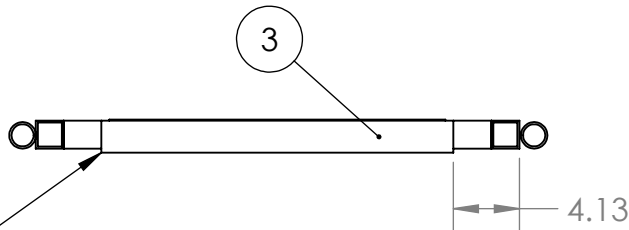
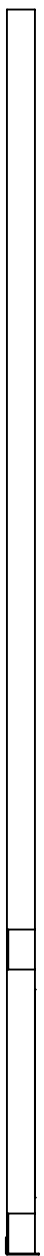
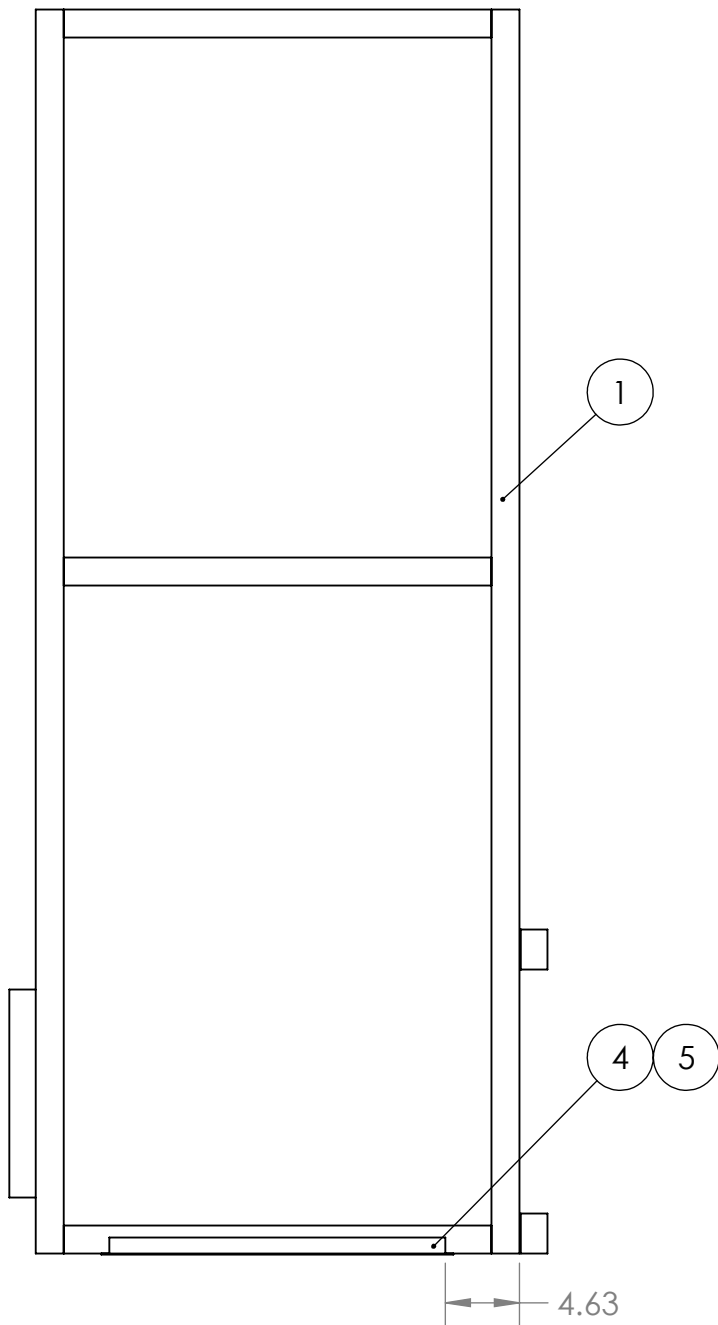
C

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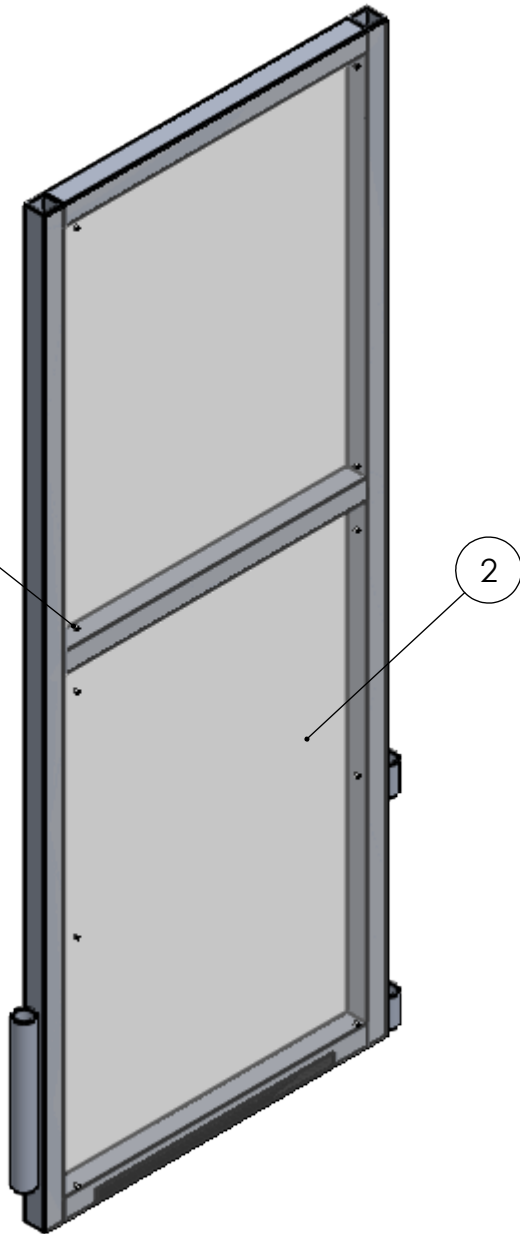
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A





- Assembly Steps:
- 1. Apply Item 4 to Item 1 as shown.
 - 2. Apply Item 5 to Item 4, but keep the protective backing on the adhesive.
 - 3. Apply Item 3 to Item 1 as shown, trim excess material or round over the edge.

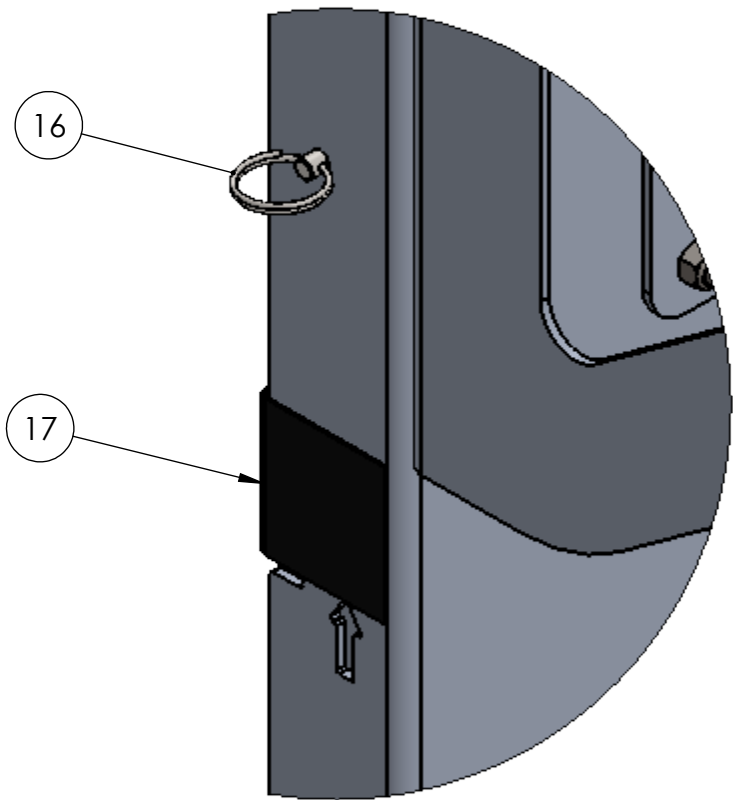
Attach using 50 lb cable ties



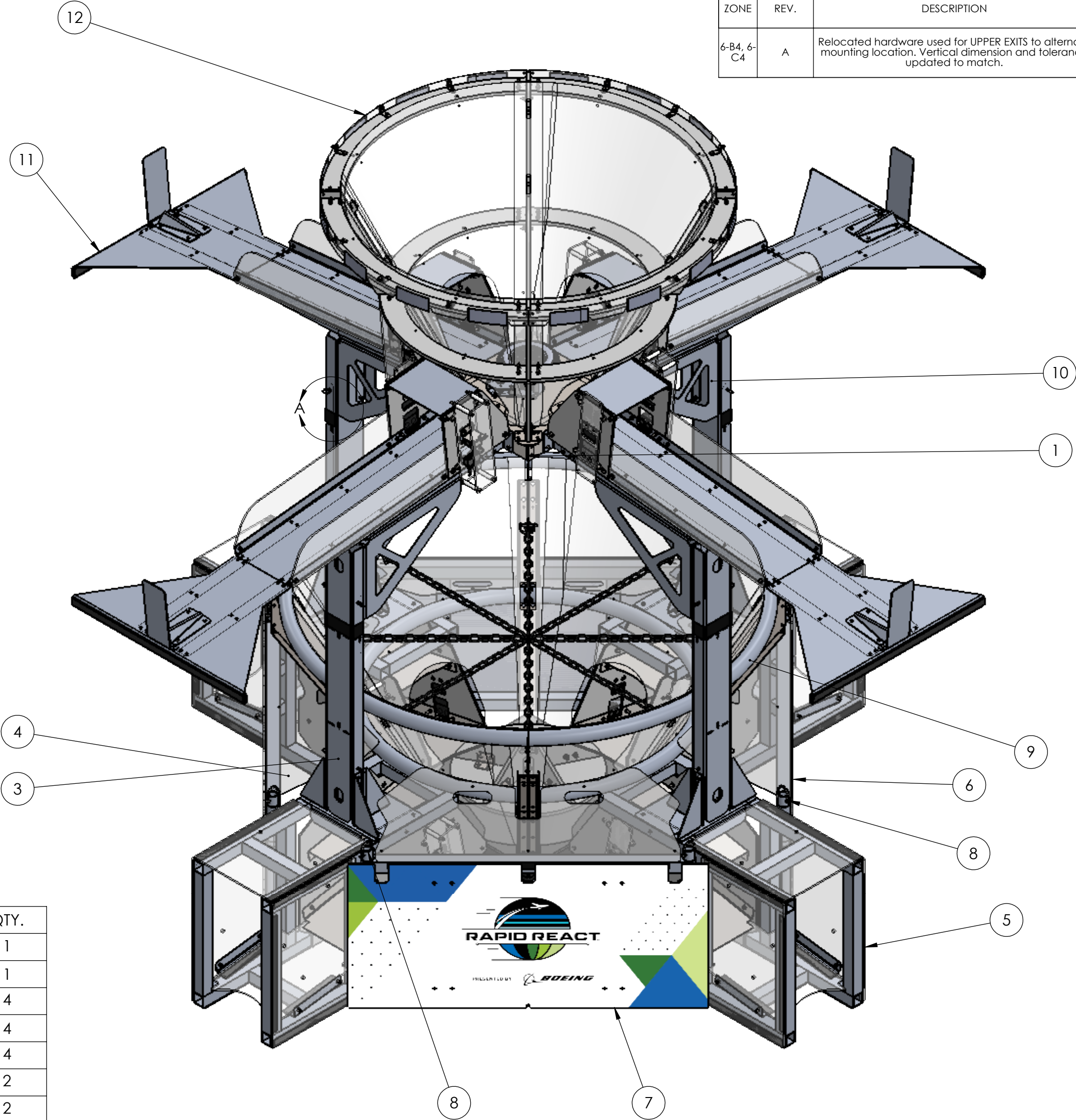
- Assembly Steps:
- 1. Remove protective backing from the loop adhesive.
 - 2. Place Item 2 in place and press against the loop.
 - 3. Secure Item 2 with 50 lb. cable ties.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div> <div>TITLE: Alliance Station Panel</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	DRAWN	DF	1/5/2022			
MATERIAL/FINISH: Tag or label with part number	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			<div>SIZE</div> <div>C</div> <div>DWG. NO.</div> <div>GE-22202</div> <div>REV</div>		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING				SCALE: 1:12		SHEET 2 OF 2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
6-B4, 6-C4	A	Relocated hardware used for UPPER EXITS to alternate mounting location. Vertical dimension and tolerance updated to match.	2/22/2022	CPO



DETAIL A
SCALE 1 : 2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22302	Leg to Upper Hub Box	1
2	GE-22303	Hub Base with Hook	1
3	GE-22305	Leg Vertical Channel Cover	4
4	GE-22306	Hub Fender Skirt	4
5	GE-22311	Lower Exit Assembly	4
6	GE-22341-Clear	Fender Assembly - Clear	2
7	GE-22341-Vinyl	Fender Assembly - Vinyl	2
8	GE-22346	Fender Pipe Assembly	8
9	GE-22351	Lower Hub	1
10	GE-22371	Hub Leg Assembly	4
11	GE-22391	Upper Exit Assembly	4
12	GE-22411	Upper Hub	1
13	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	36
14	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	16
15	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	24
16	pin_quick_ring_.25_0.375	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 0.375" Usable Length	16
17	tapeline_HUBLEGROBOTHEIGHT	2" Gaffers Tape, Black	5

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	CO	12/17/2021

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Hub

SIZE	DWG. NO.	REV
C	GE-22300	A

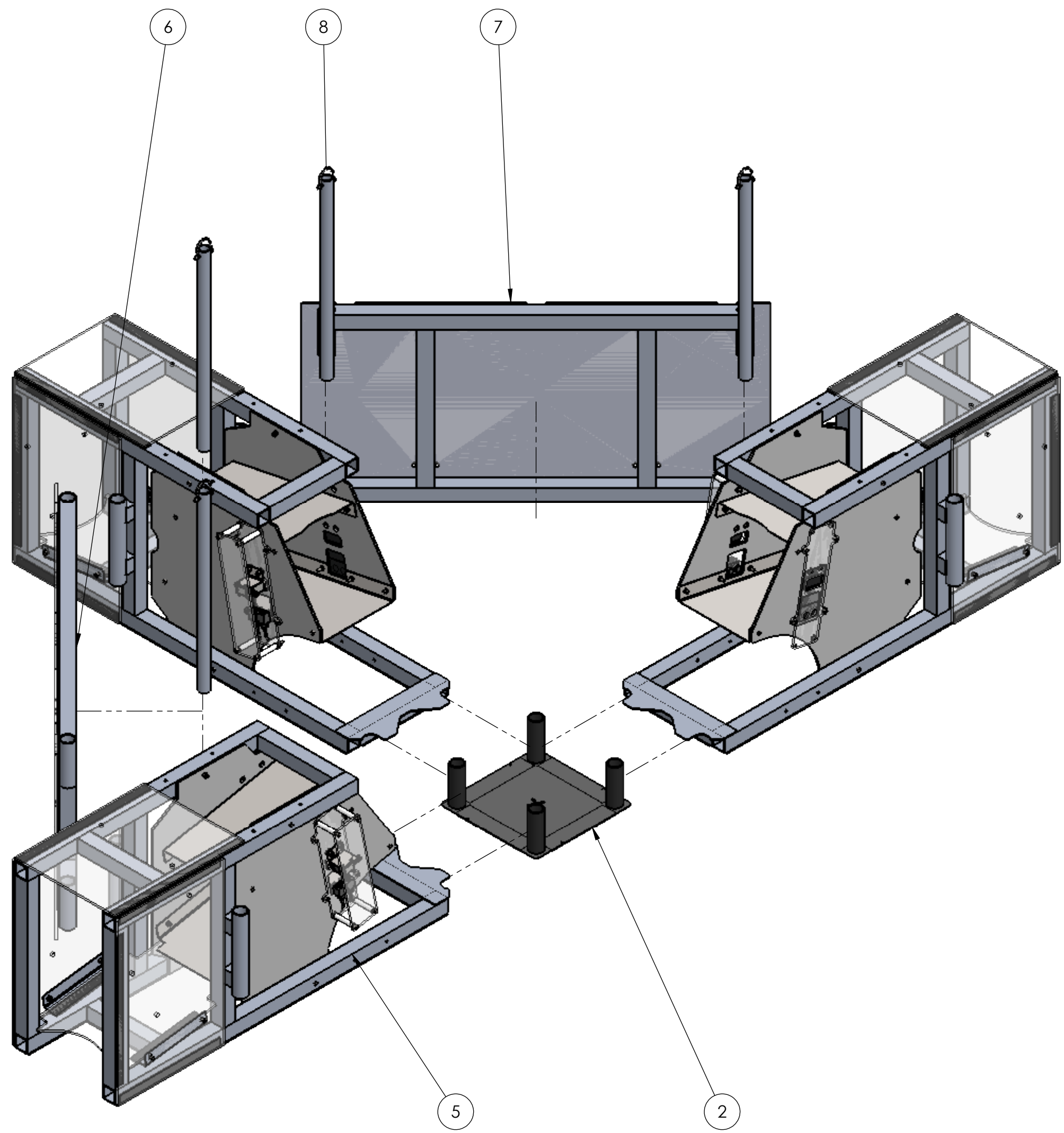
SCALE: 1:12 SHEET 1 OF 7

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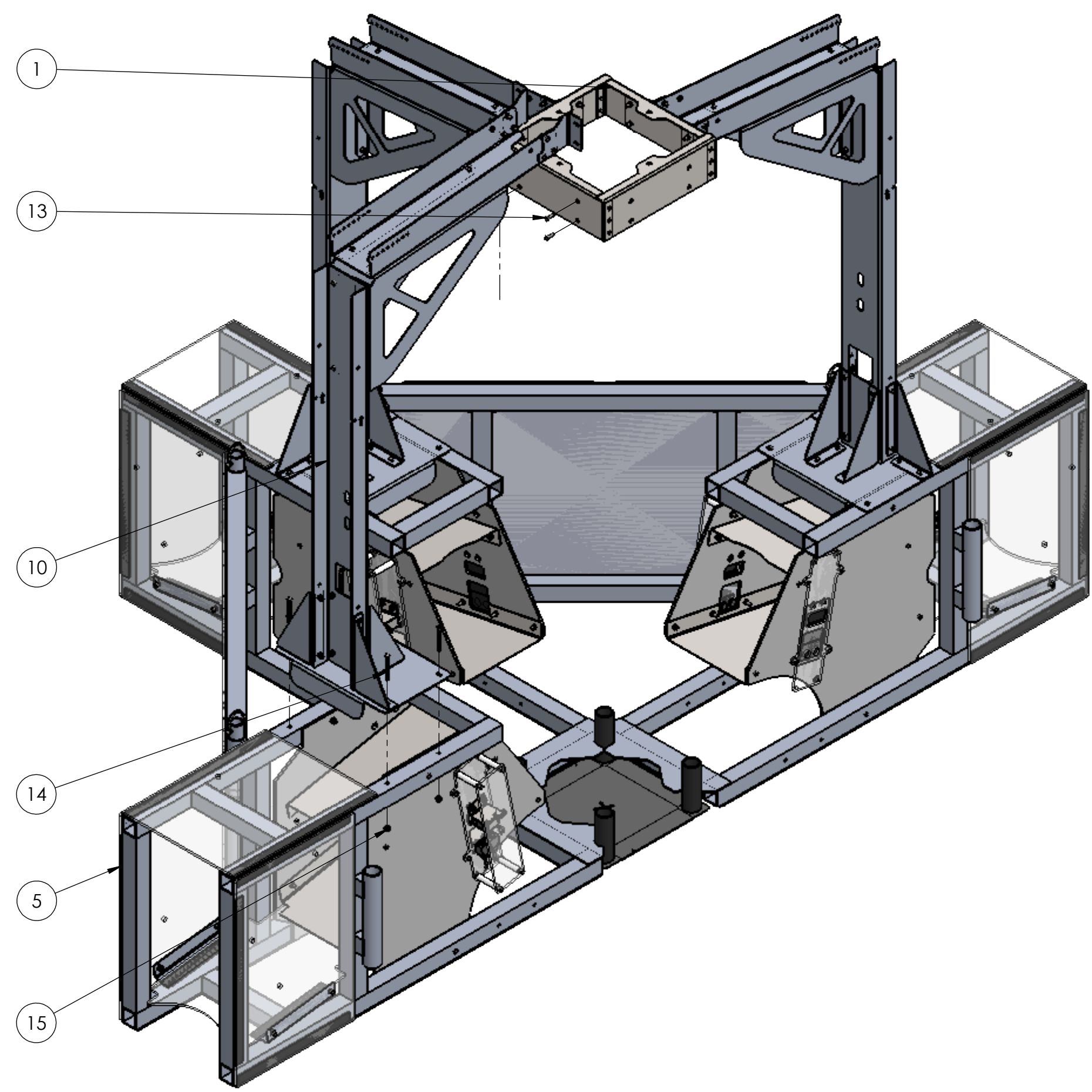
- Notes:
- Place **2** down.
 - Slide **5** in place against **2** , aligning cutouts to pipes.
 - Attach **6** and **7** to **5** using **8** .

D



C

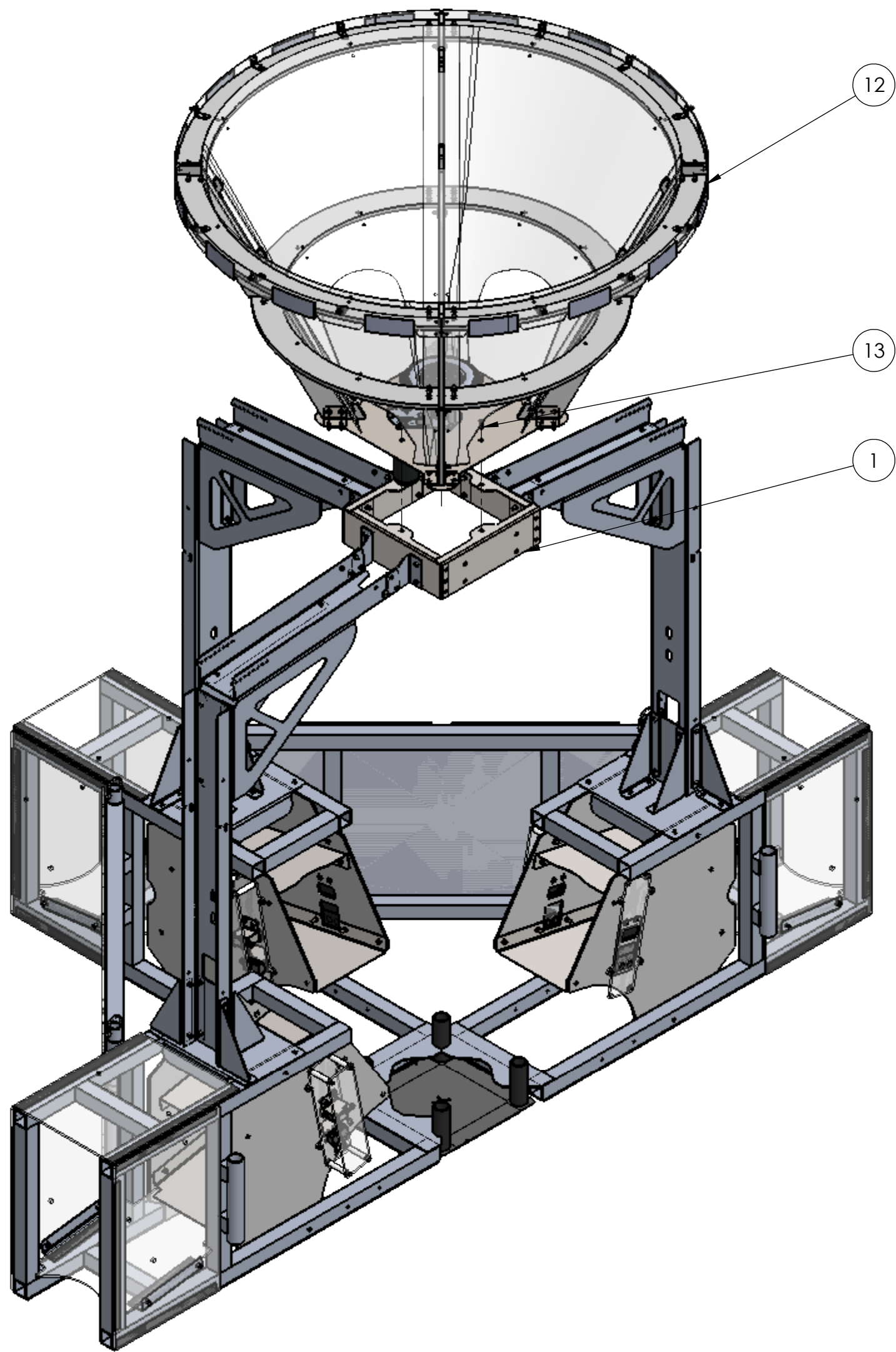
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A

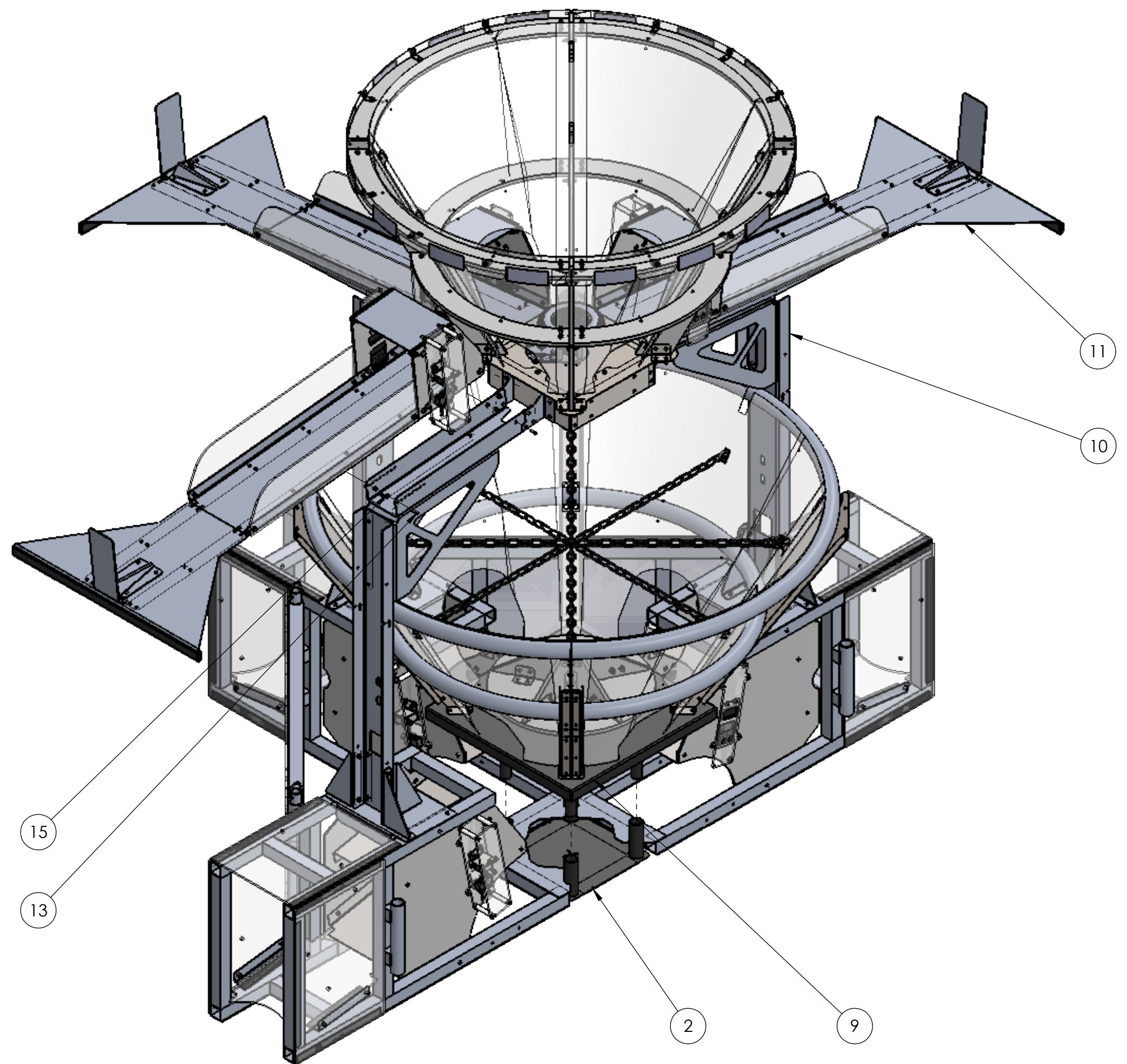


- Notes:
- Attach **10** to **15** using **14** and **15** .
 - Attach **10** to **1** using **13** .



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.50 MATERIAL/FINISH: DO NOT SCALE DRAWING	FIELD	NAME	DATE	<div></div> <div>TITLE: Hub</div>		
	DRAWN	CO	12/17/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22300	A
				SCALE: 1:10		SHEET 2 OF 7

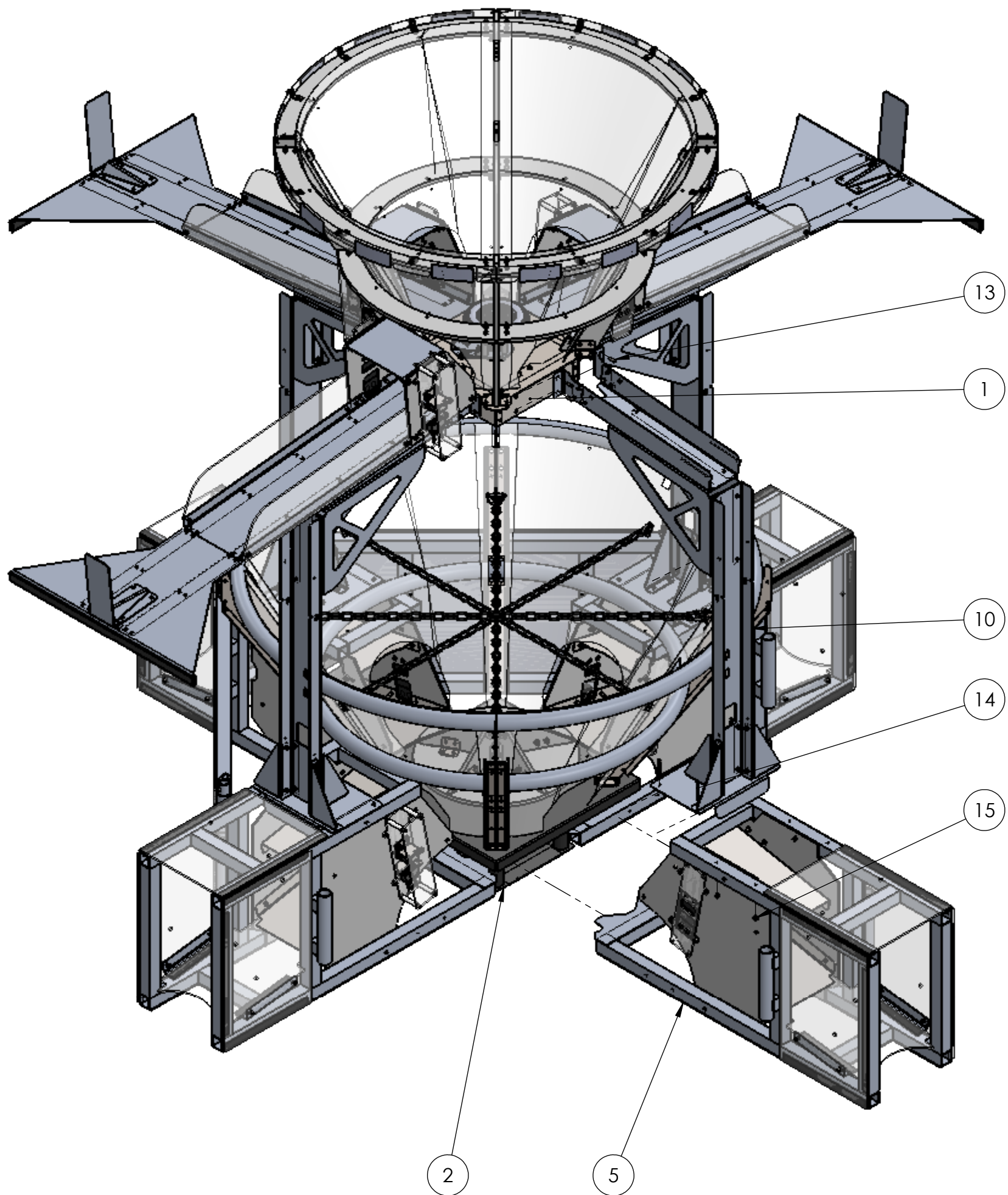


- Notes:
1. Attach 12 to 1 using 13.



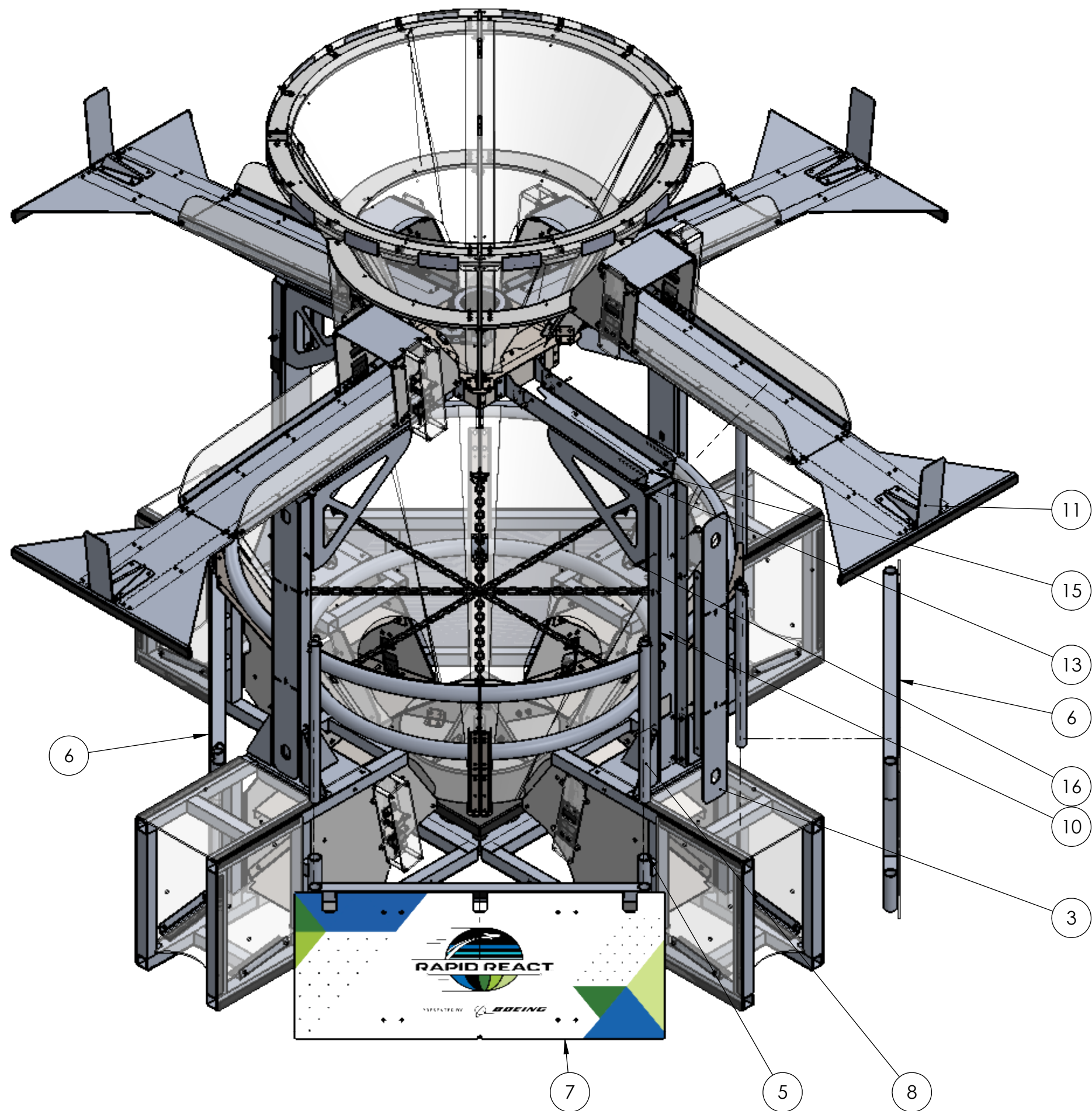
- Notes:
1. Attach 11 to 10 using 13 and 15.
 2. Insert 9 into receiving tubes of 2.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	 		
	DRAWN	CO	12/17/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22300	A
DO NOT SCALE DRAWING				SCALE: 1:12		SHEET 3 OF 7



Notes:

- Slide (5) into place flush against (2).
- Attach (10) to (5) using (14) and (15).
- Attach (10) to (1) using (13).



Notes:

- Attach (6) and (7) to assembly using (8) to connect to (5). (7) should oppose other (7), and (6) should oppose other (6).
- Attach (3) to (10) using (16).
- Attach (11) to (10) using (13) and (15).

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

CO

DATE

12/17/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE:

Hub

SIZE

C

DWG. NO.

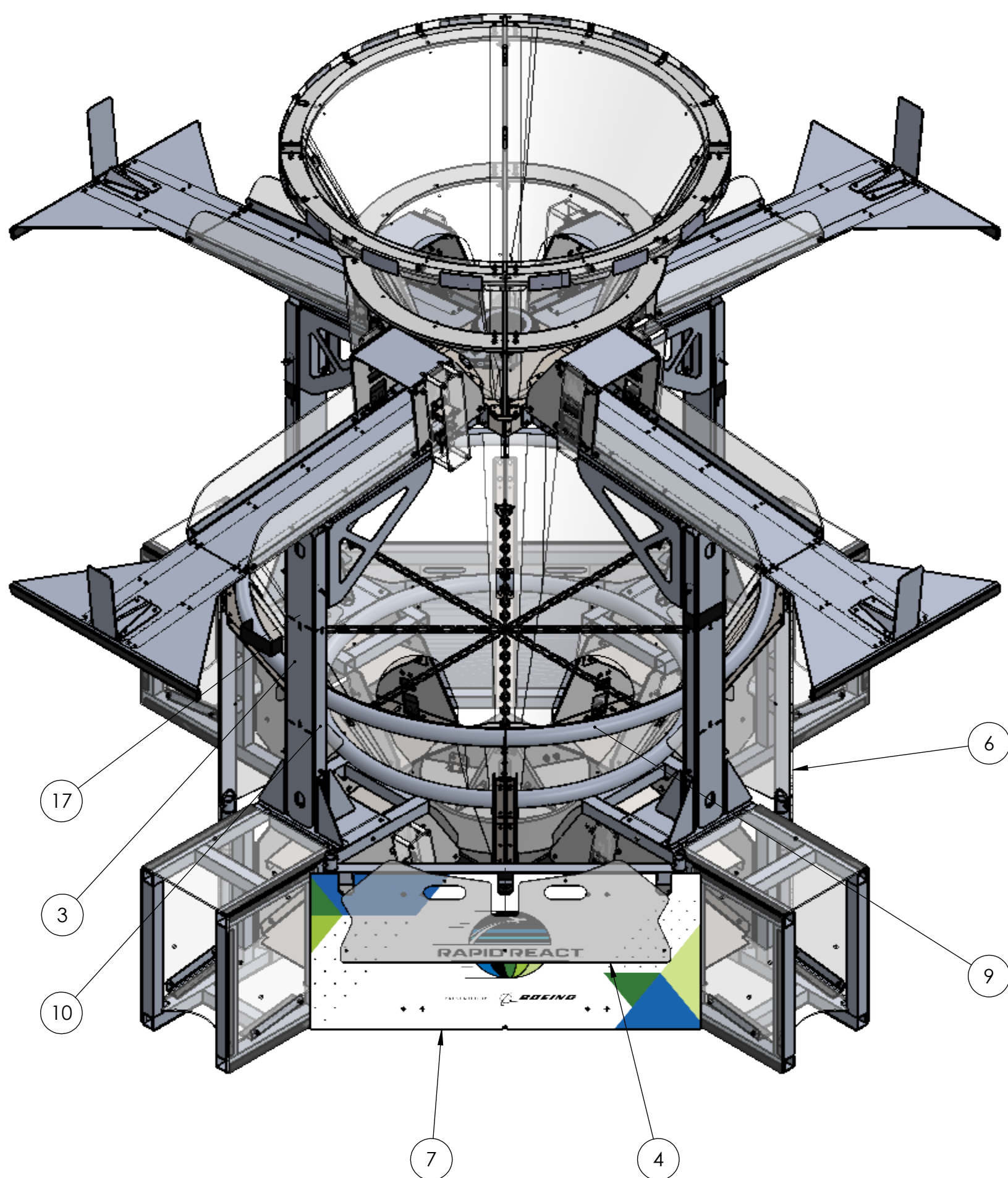
GE-22300

REV



A

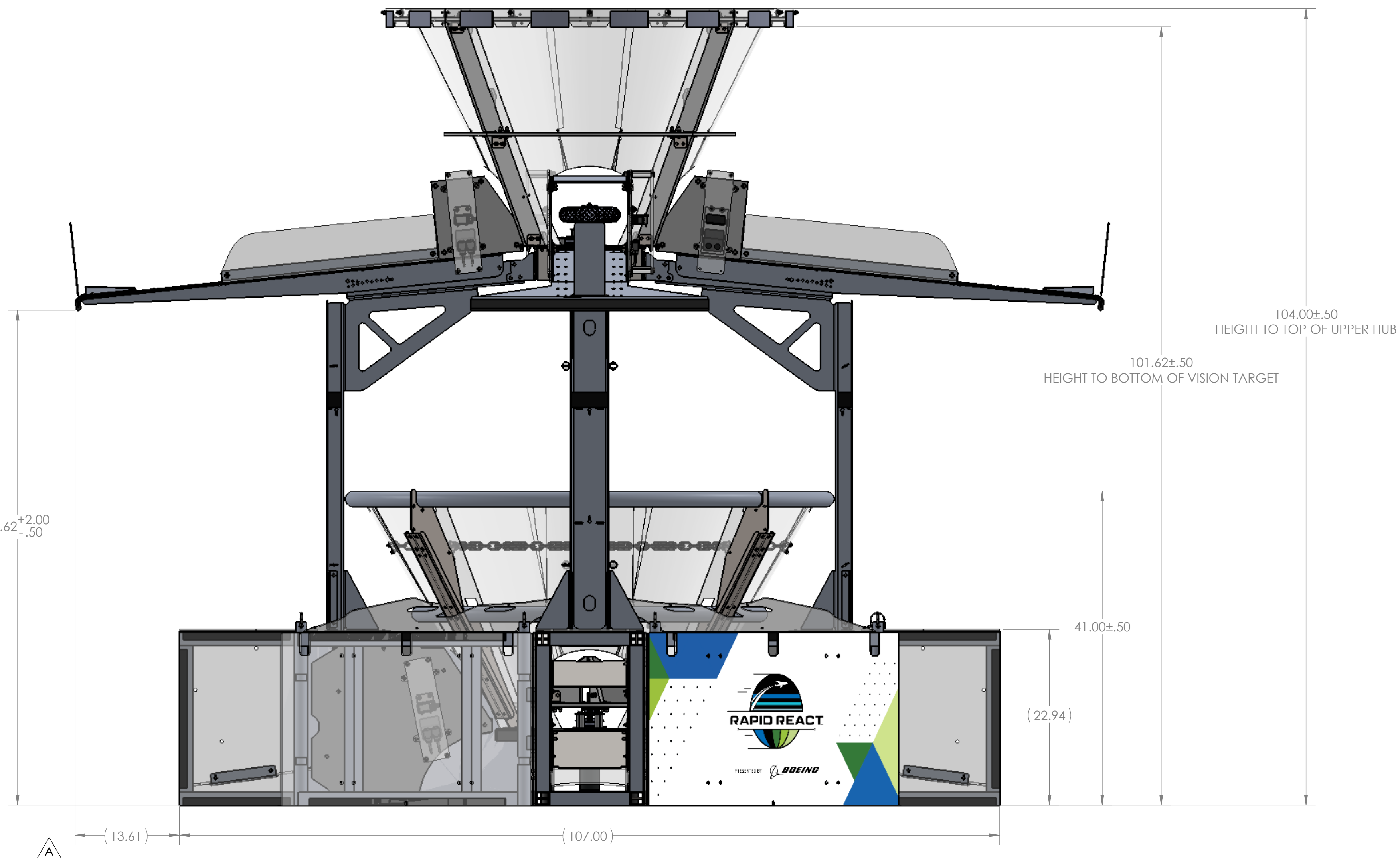
SCALE: 1:14



SHEET 4 OF 7

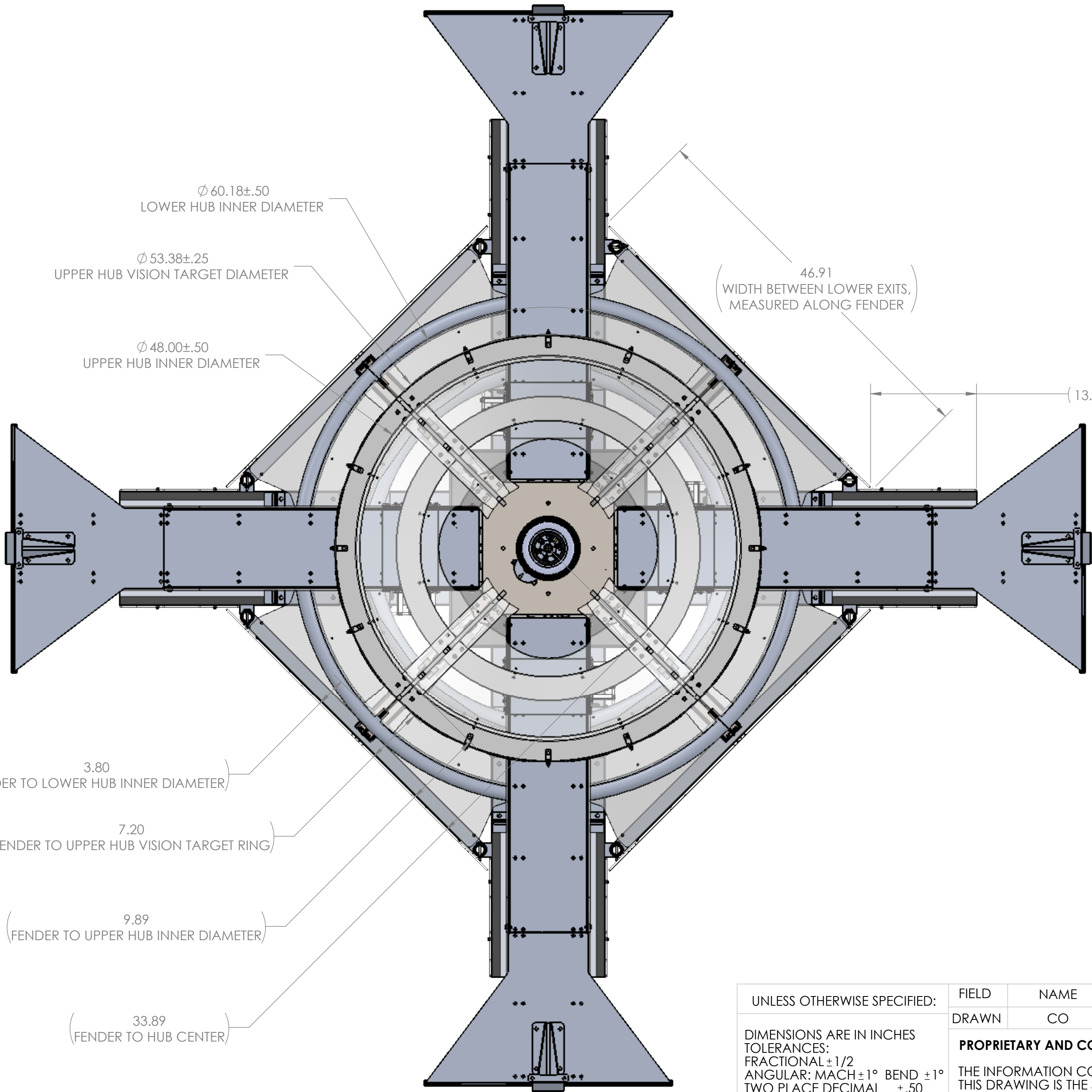


- Notes:
1. Attach (4) to assembly, using cable ties to connect to (9) and either (6) or (7).
 2. Attach (17) to (3) and (10), aligning bottom of (17) to notches on (3) and (10).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	CO	12/17/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22300	A
DO NOT SCALE DRAWING				SCALE: 1:14		SHEET 5 OF 7



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.50		DRAWN	CO	12/17/2021	TITLE: Hub		
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
MATERIAL/FINISH:					C	GE-22300	A
DO NOT SCALE DRAWING					SCALE: 1:10		SHEET 6 OF 7



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

CO

DATE

12/17/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Hub

SIZE

C

DWG. NO.

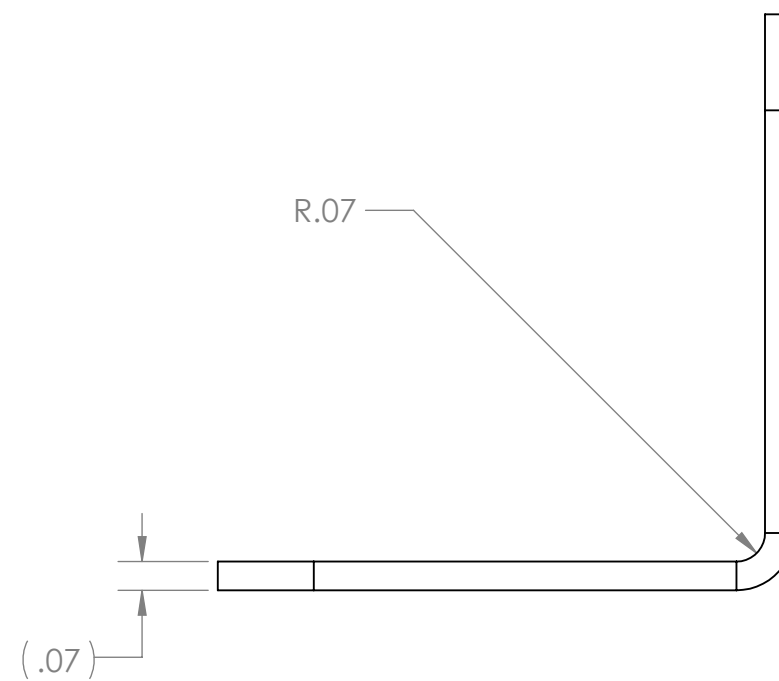
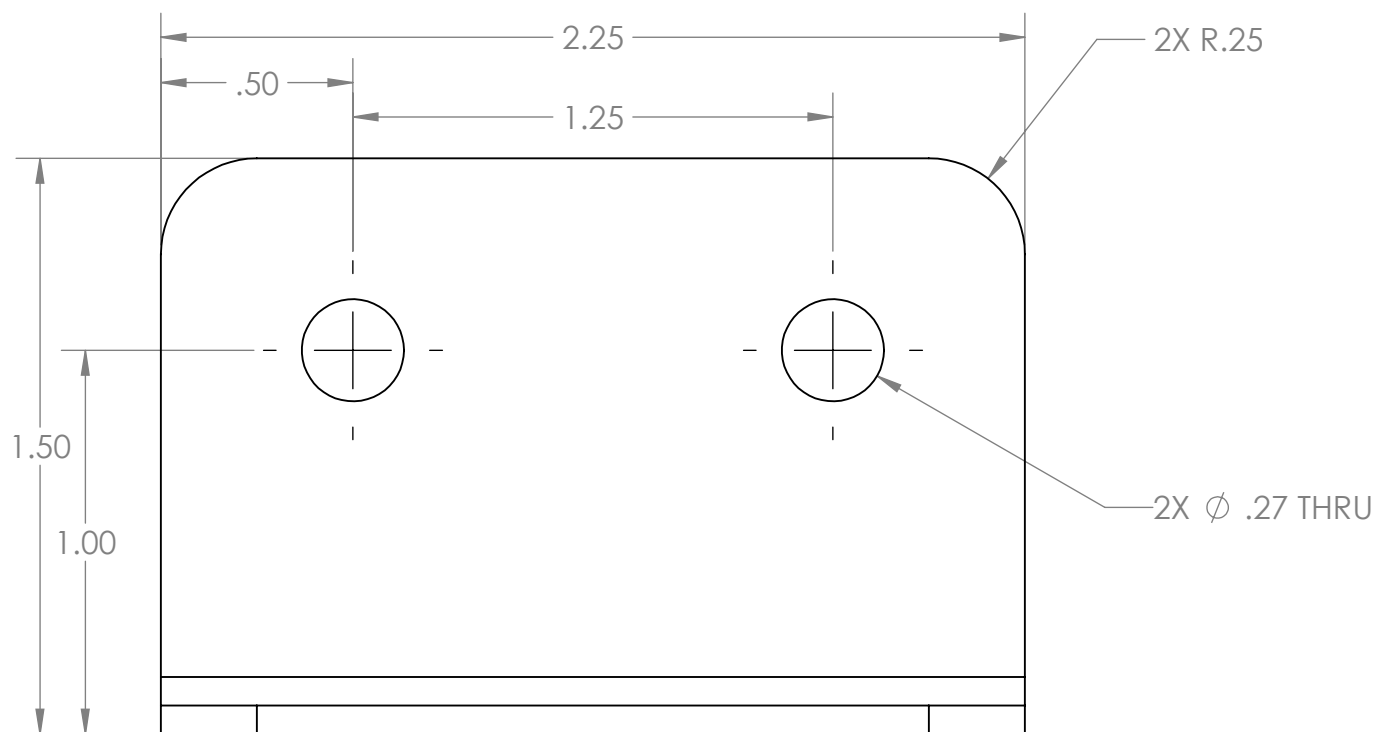
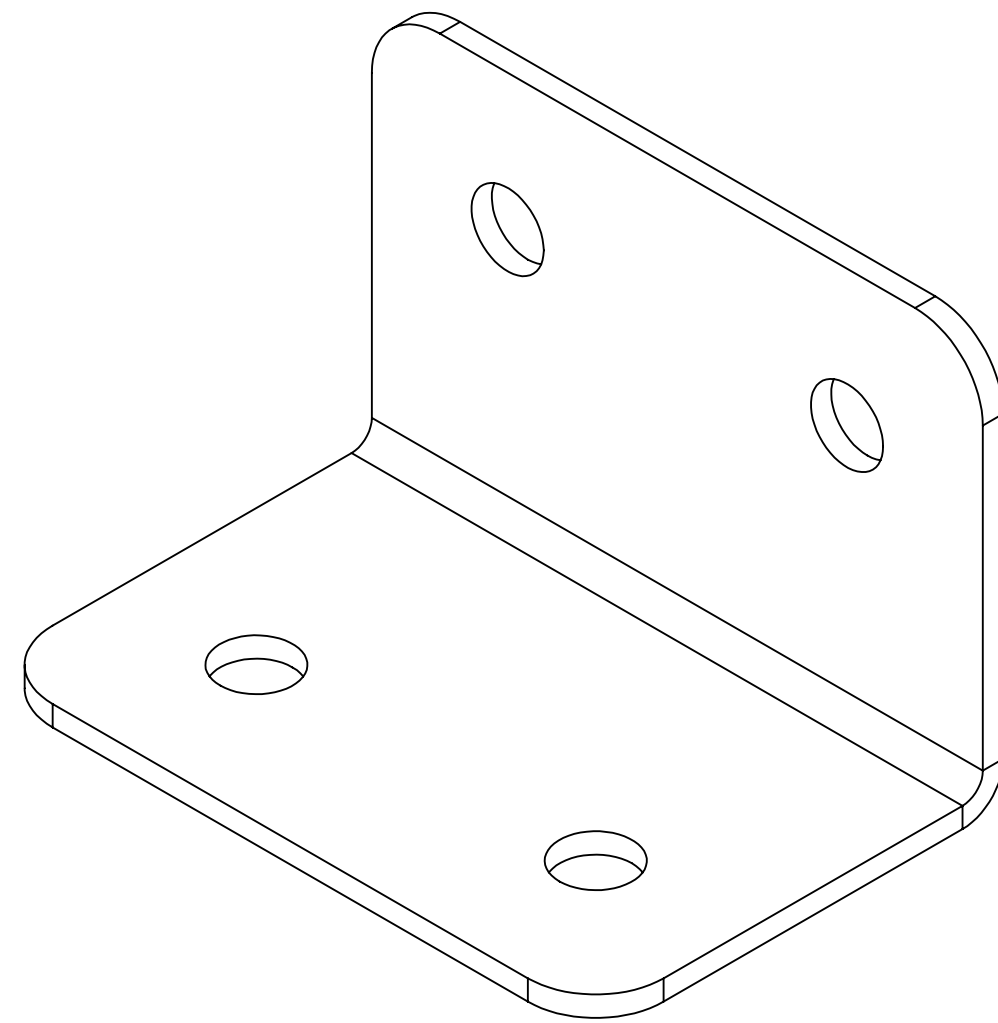
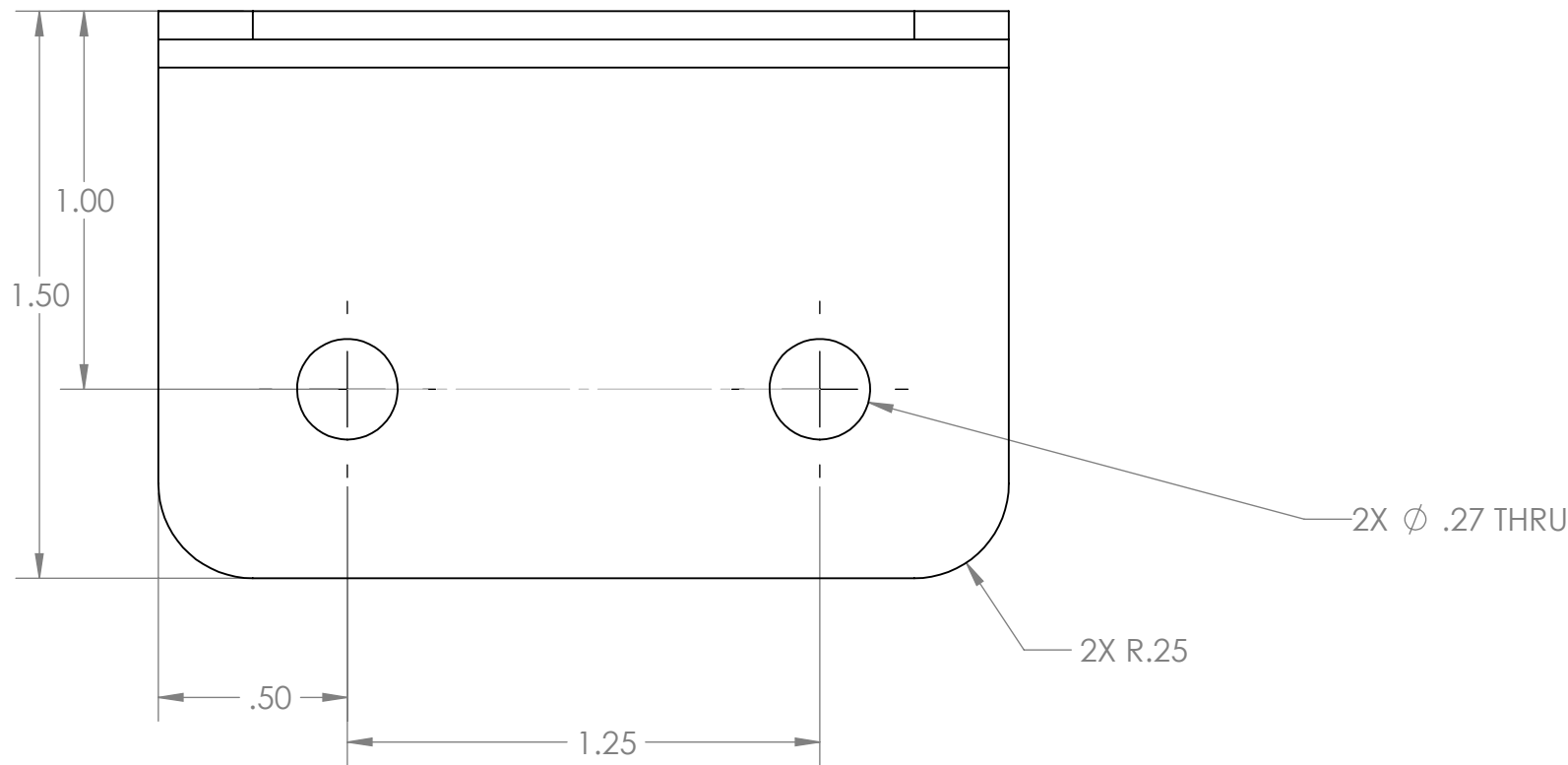
GE-22300

REV



A

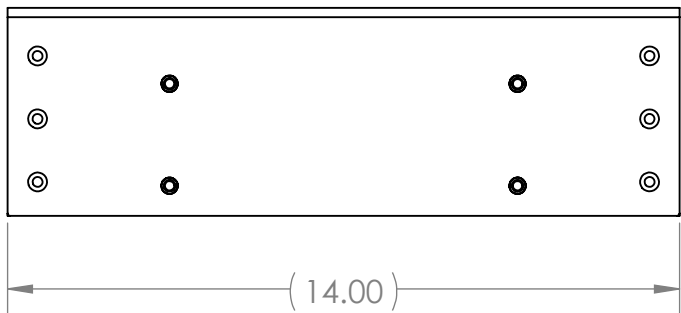
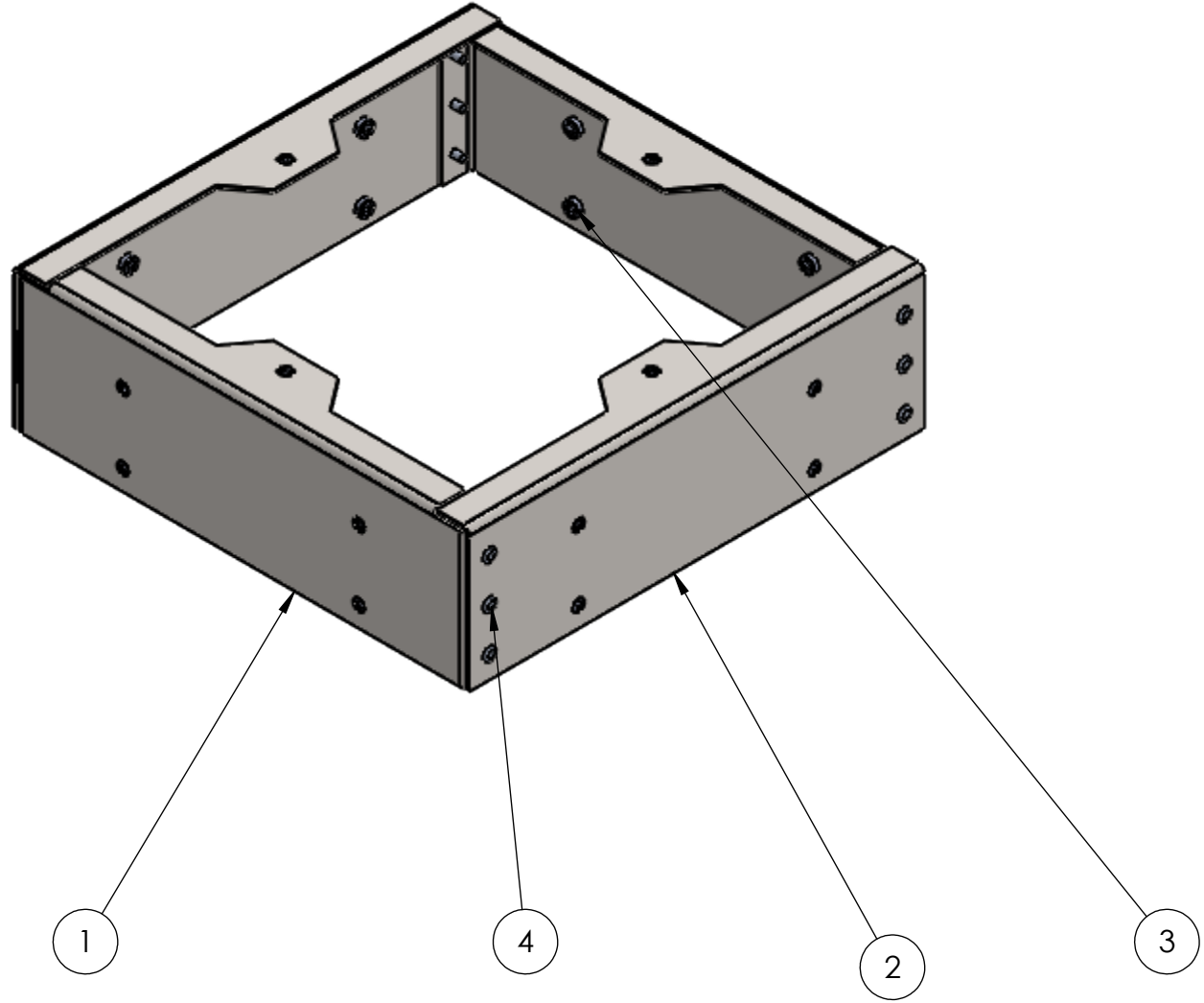
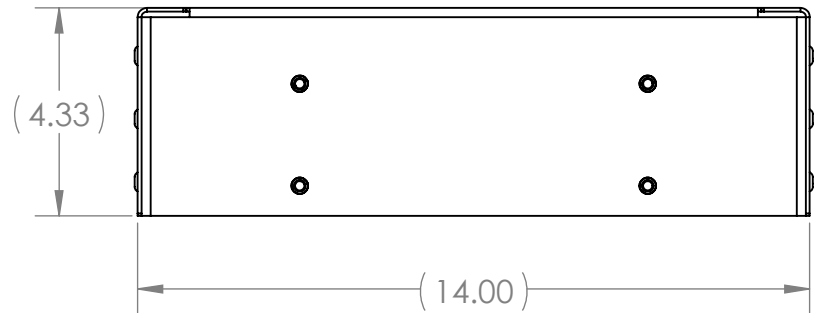
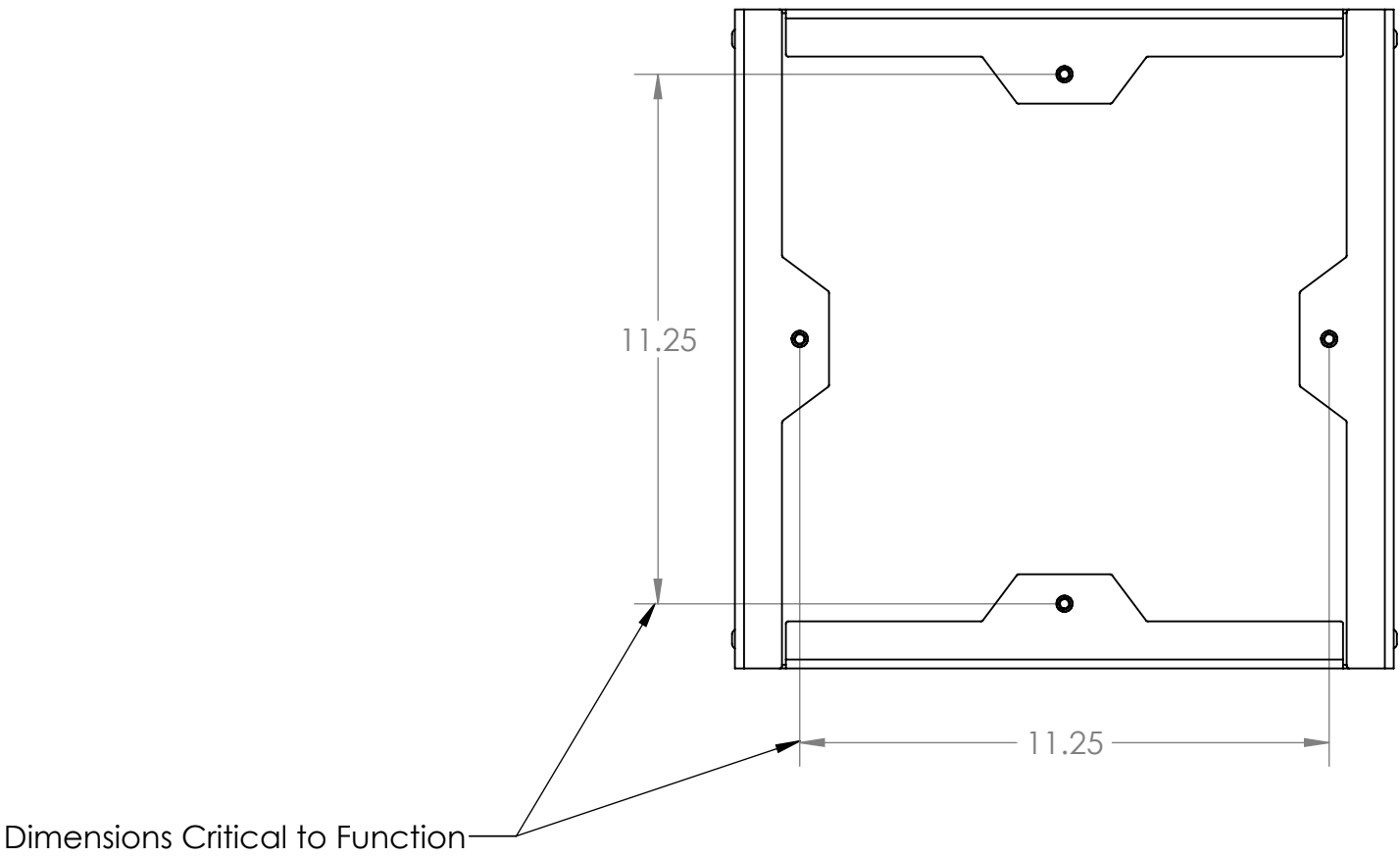
SCALE: 1:10

SHEET 7 OF 7



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div><div></div><div>TITLE: <h1>Hub Angle Bracket</h1></div></div>		
	DRAWN	KAMC	6/17/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			SIZE C		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 14 ga. Pre-Plated Steel	COMMENTS:			DWG. NO.		REV
	REMOVE ALL BURRS AND SHARP EDGES.			GE-22301		
DO NOT SCALE DRAWING				SCALE: 2:1		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22302-01	14 Ga. Pre-plated steel	2
2	GE-22302-02	14 Ga. Pre-plated steel	2
3	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	20
4	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	12

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

BEND

NAME

DATE

DRAWN

CO



7/20/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:

Leg to Upper Hub Box

SIZE

DWG. NO.

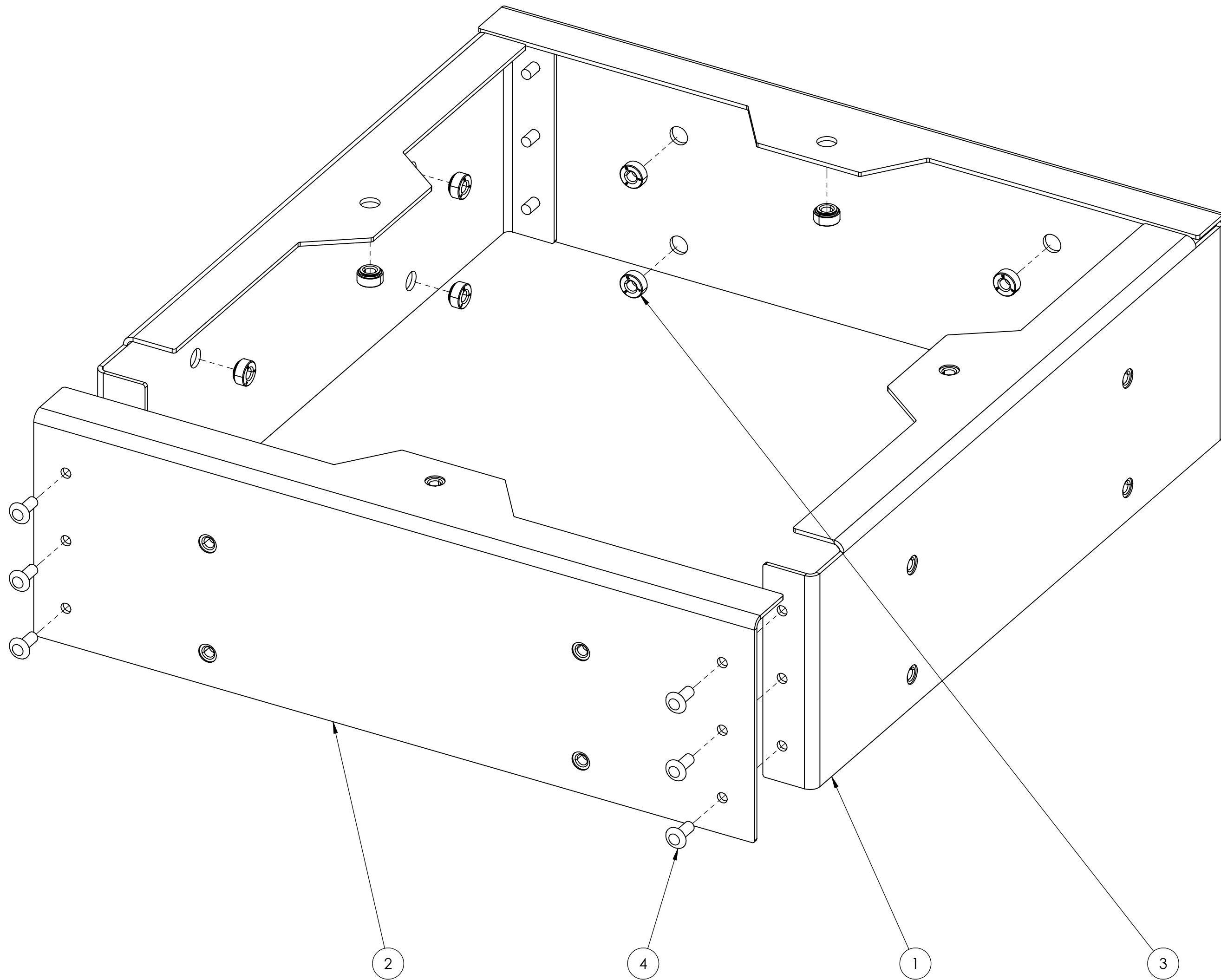
REV

C



GE-22302

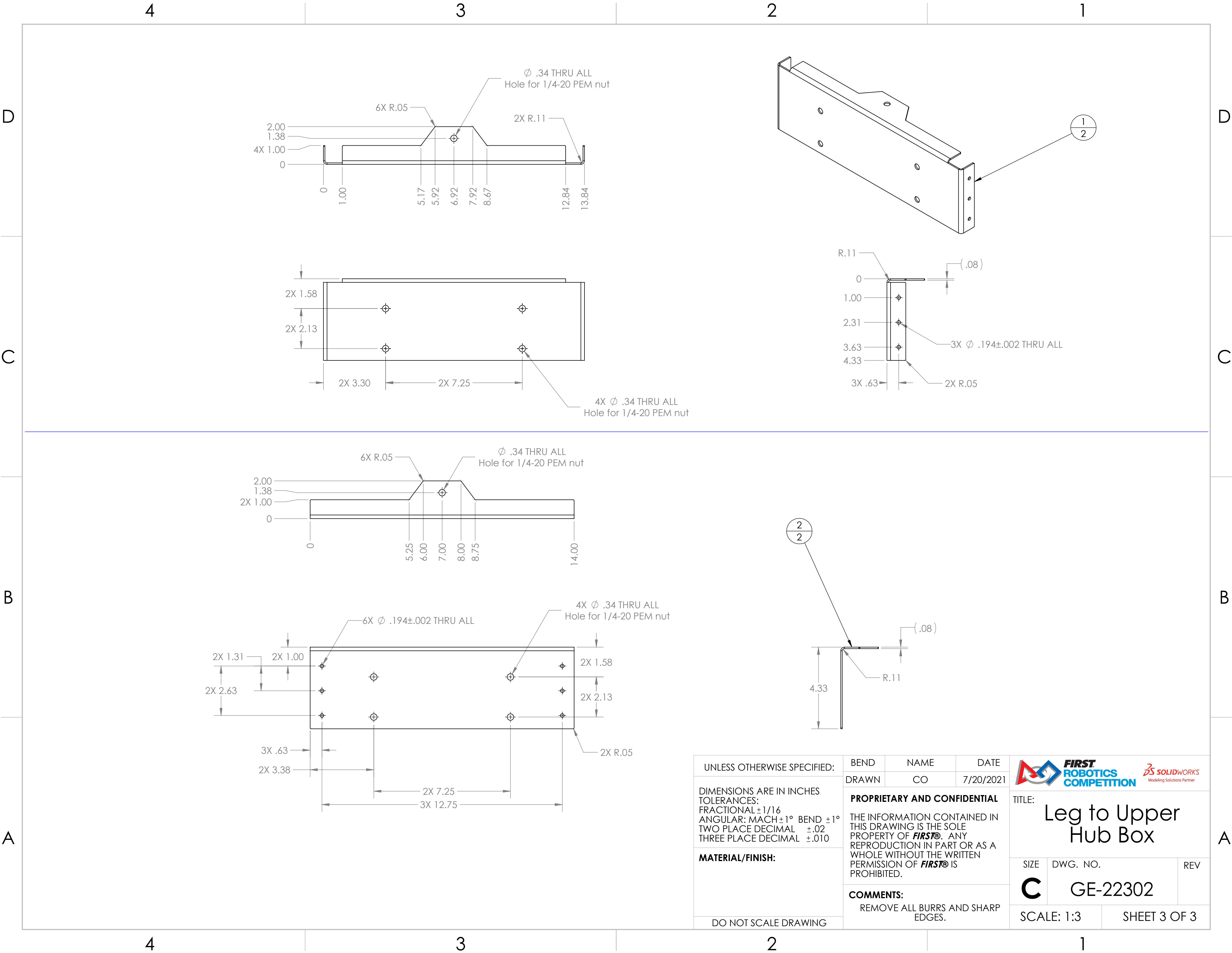
SCALE: 1:4



SHEET 1 OF 3



UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE
		DRAWN	CO	7/20/2021
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING				

TITLE:				
Leg to Upper Hub Box				
SIZE	DWG. NO.	REV		
C	GE-22302			
SCALE: 2:3		SHEET 2 OF 3		



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>	
	DRAWN	CO	7/20/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: Leg to Upper Hub Box	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST ® IS PROHIBITED.				
	MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C
DO NOT SCALE DRAWING				SCALE: 1:3	
			SHEET 3 OF 3		

4

3

2

1

D

D

C

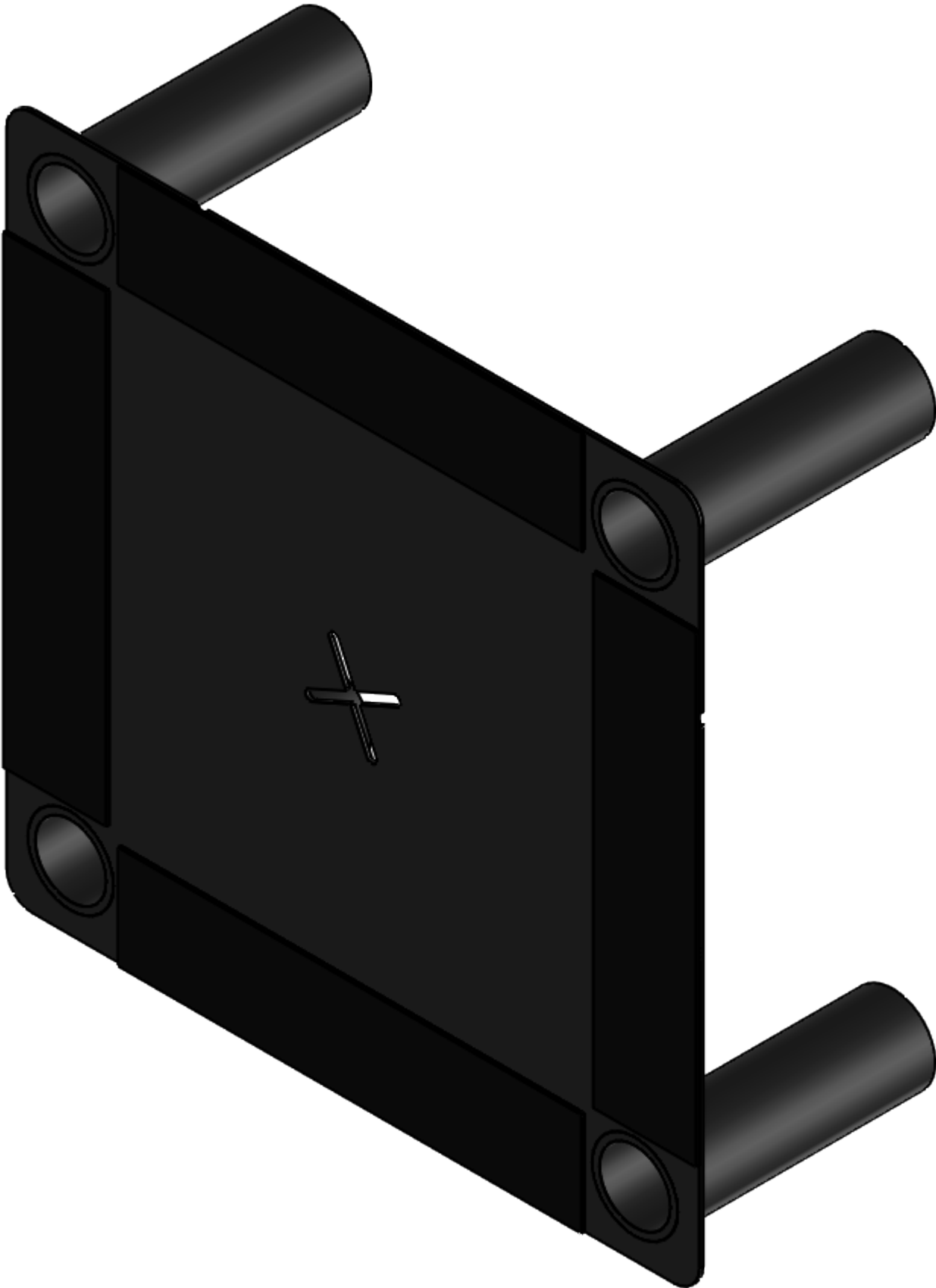
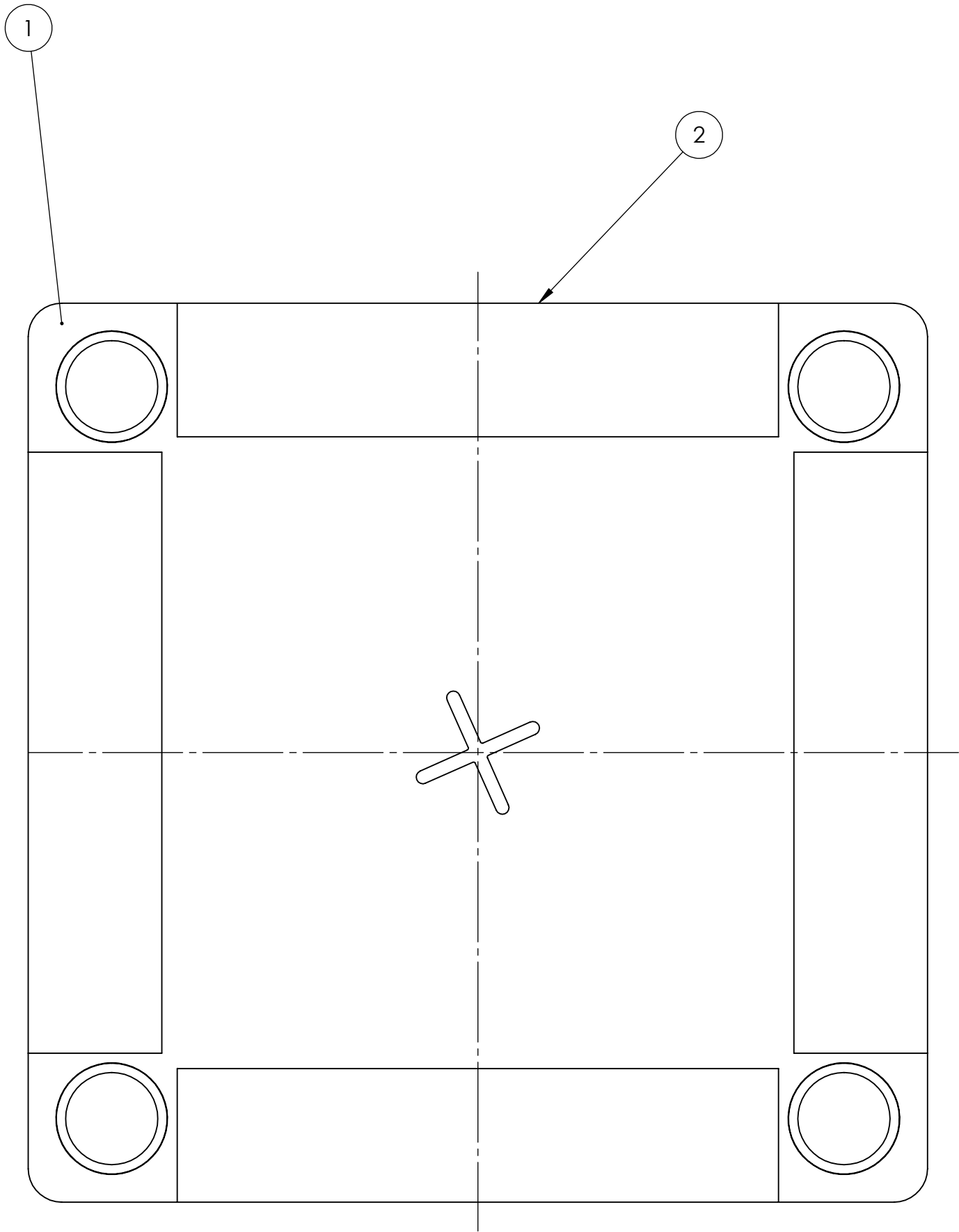
C

B

B

A

A



Notes:

1. Ensure surface of (1) is clean prior to hook application.
2. Attach (2) to (1) in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22304	Hub Base	1
2	Hook_2_9	2" x 9" Hook, Adhesive Backed	4

4

3

2

1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

12/14/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE:

Hub Base with
Hook

SIZE

C

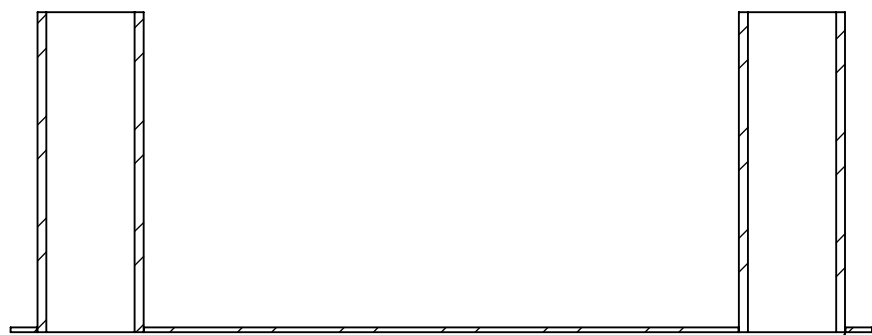
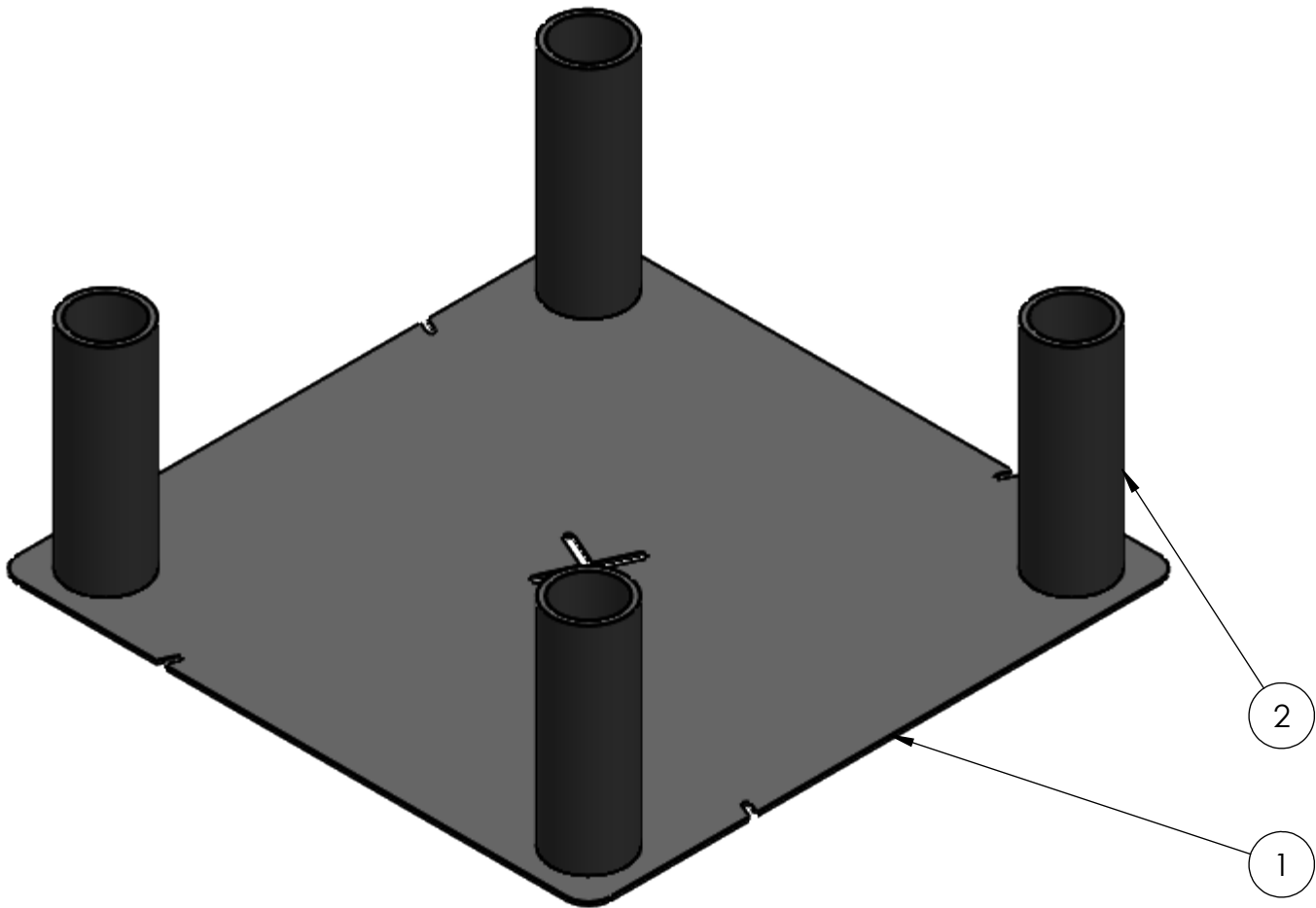
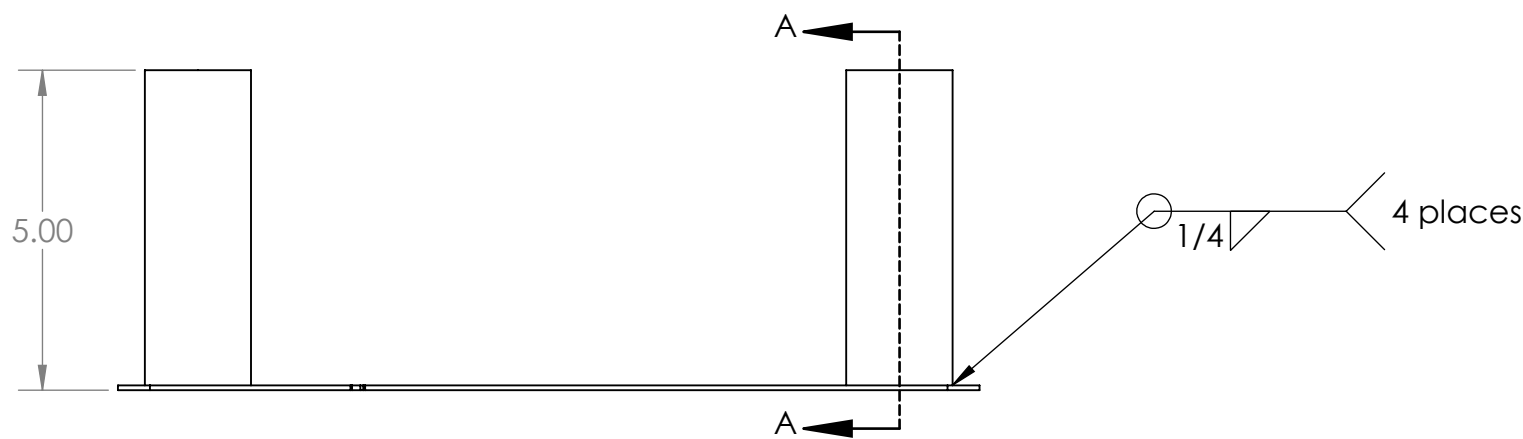
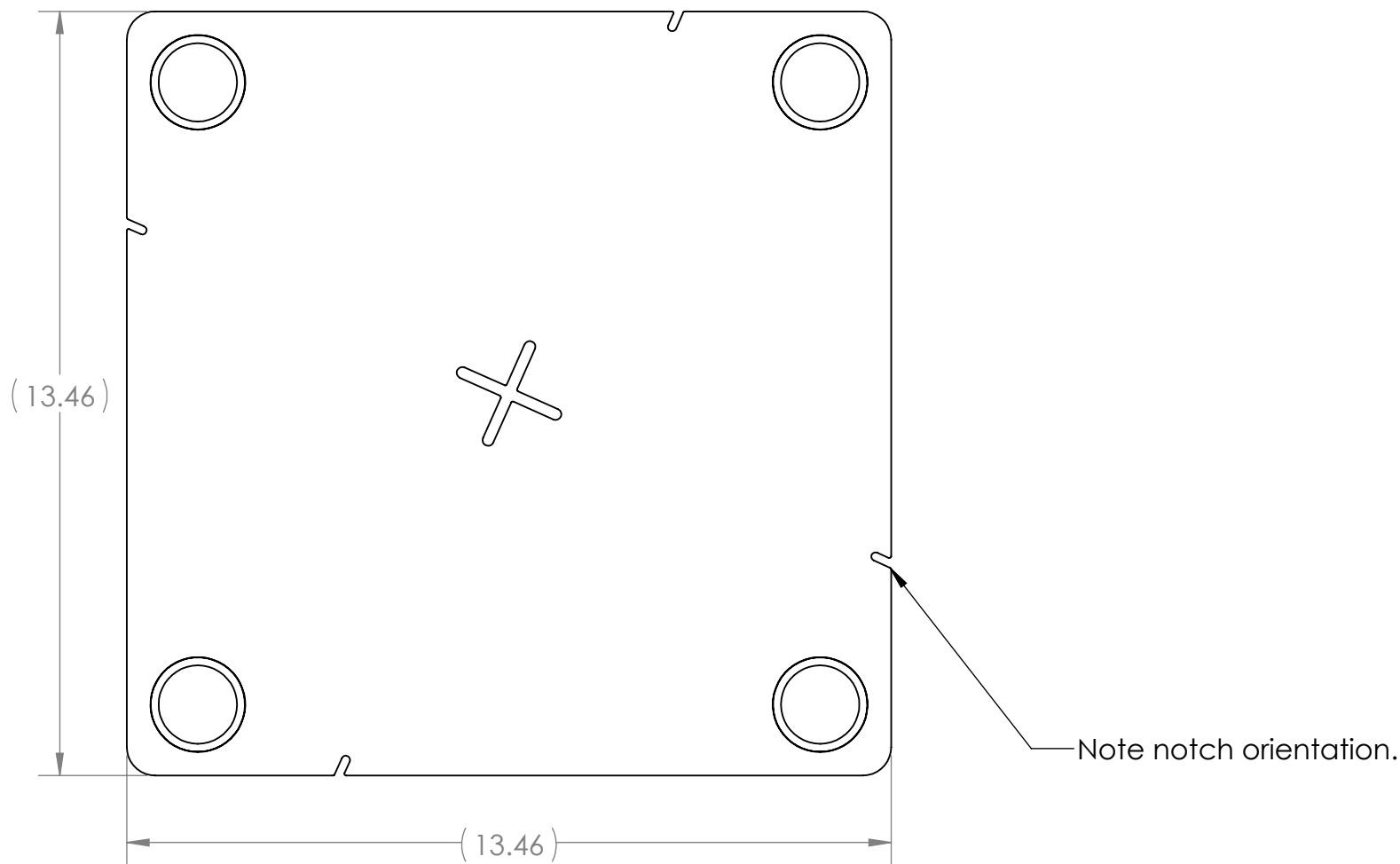
DWG. NO.

GE-22303

REV

SCALE: 1:2



SHEET 1 OF 1

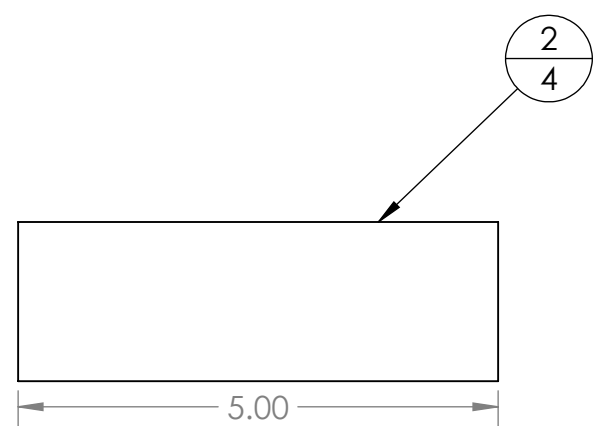
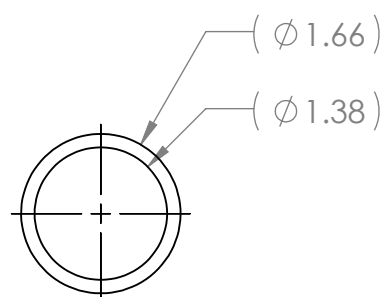
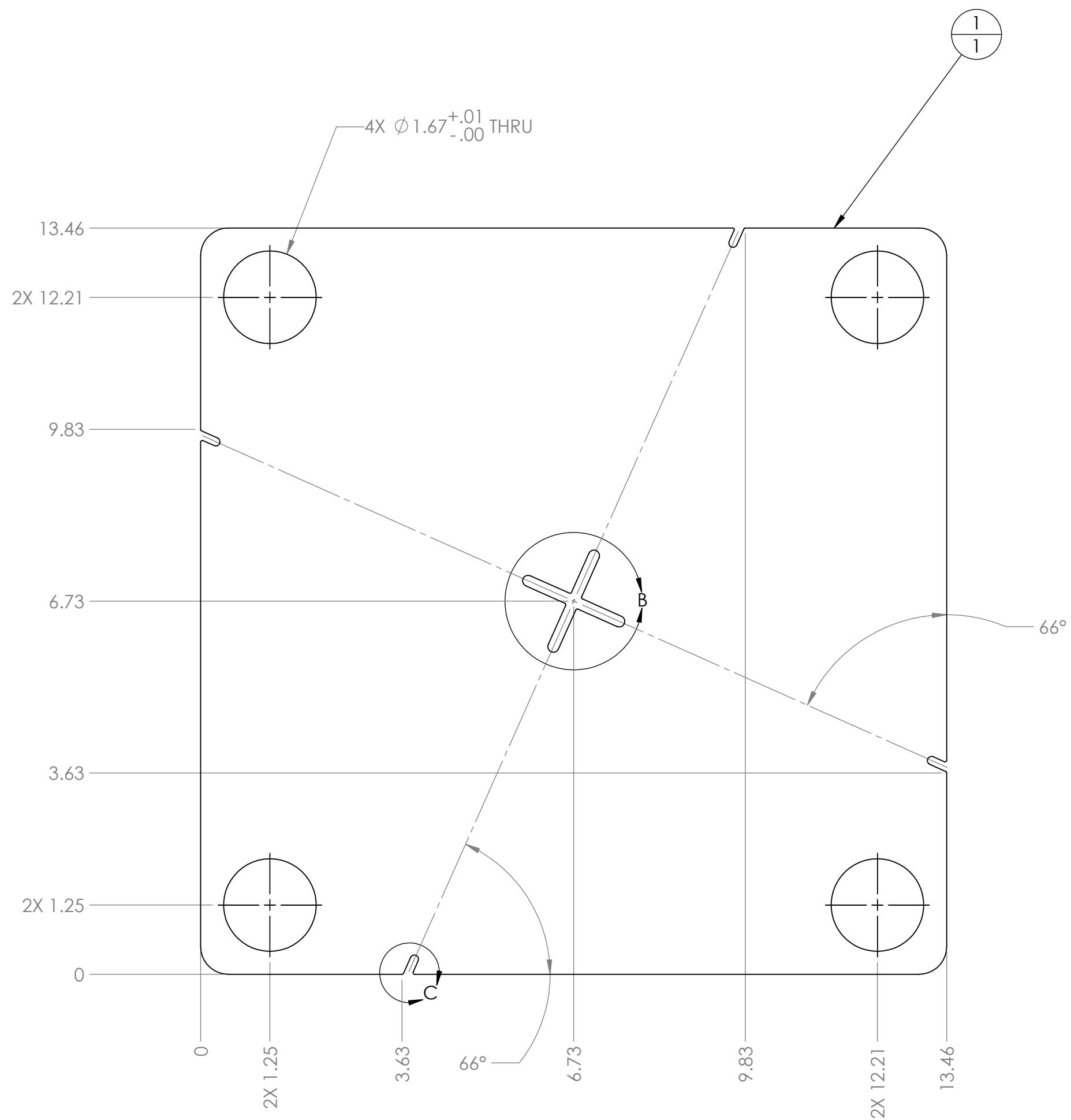
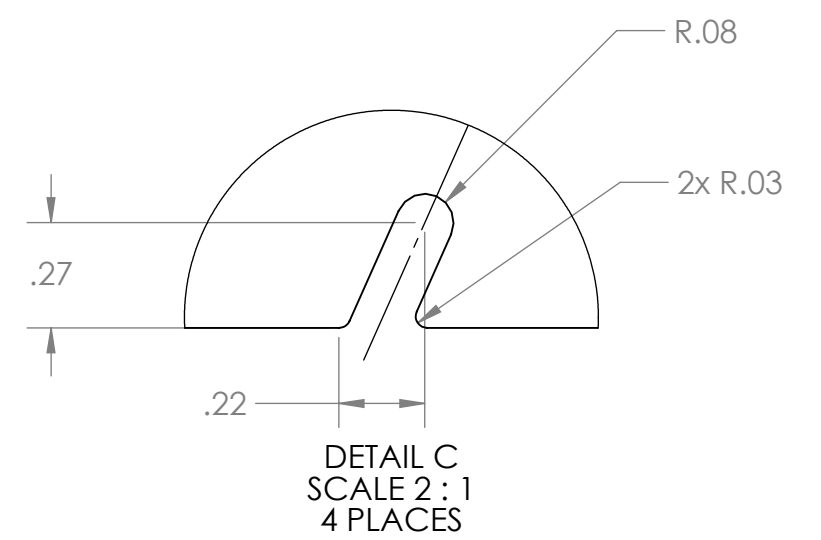
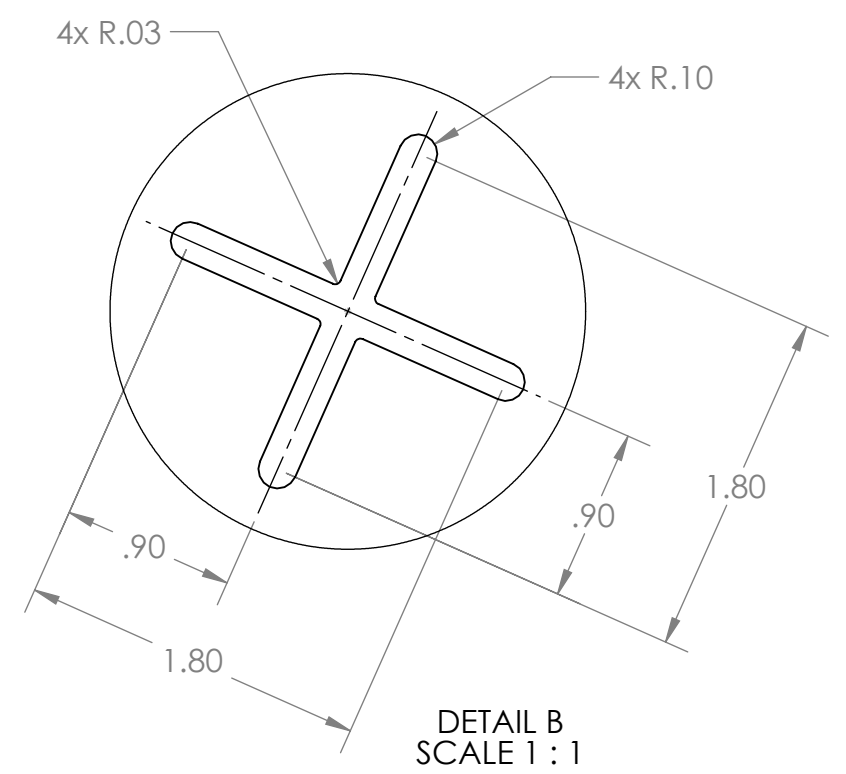




Bottom of (2) coincident
with bottom of item (1).

Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22304-01	14 Ga. A-366/1008 Cold Roll Steel	1
2	GE-22304-02	1.25" Schedule 40 Pipe, A500 Steel	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015 MATERIAL/FINISH: Powder Coated Black DO NOT SCALE DRAWING	WELD	NAME	DATE	<div></div> <div>TITLE: <h1>Hub Base</h1></div> <div><div>SIZE C</div><div>DWG. NO. GE-22304</div><div>REV</div></div> <div>SCALE: 1:3</div> <div>SHEET 1 OF 3</div>	
	DRAWN	CO	7/19/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				



UNLESS OTHERWISE SPECIFIED:		WELD	NAME	DATE	<div></div>		
		DRAWN	CO	7/19/2021			
<div>DIMENSIONS ARE IN INCHES</div> <div>TOLERANCES:</div> <div>FRACTIONAL $\pm 1/16$</div> <div>ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$</div> <div>TWO PLACE DECIMAL $\pm .02$</div> <div>THREE PLACE DECIMAL $\pm .015$</div>		PROPRIETARY AND CONFIDENTIAL			<div>TITLE:</div> <div>Hub Base</div>		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
		MATERIAL/FINISH:					SIZE
Powder Coated Black					C	GE-22304	
DO NOT SCALE DRAWING		COMMENTS:			SCALE: 1:2		SHEET 2 OF 3
		REMOVE ALL BURRS AND SHARP EDGES.					

4

3

2

1

D

D

C

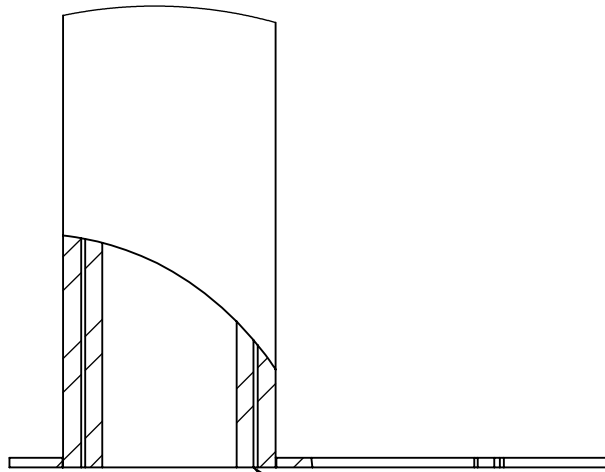
C

B

B

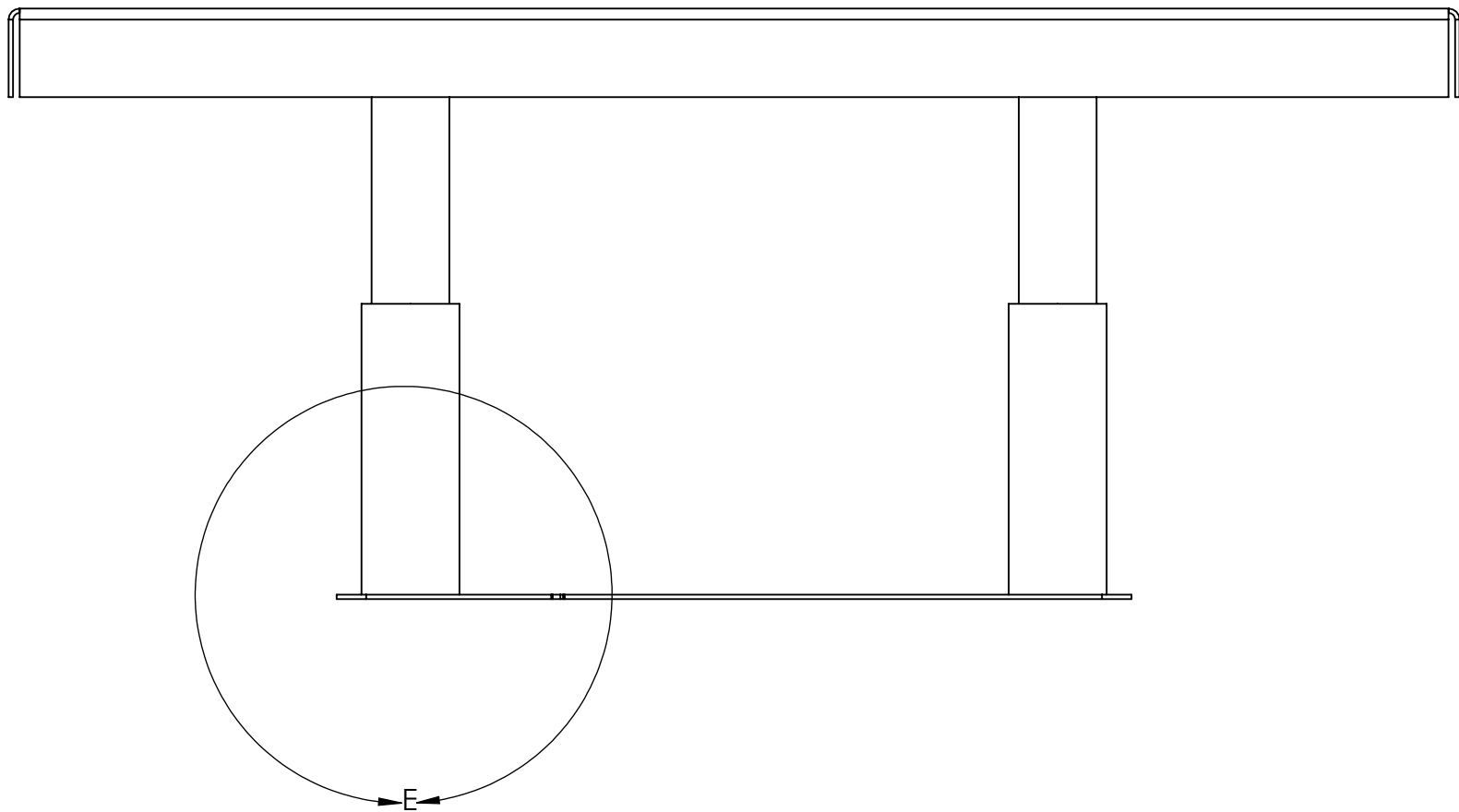
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A

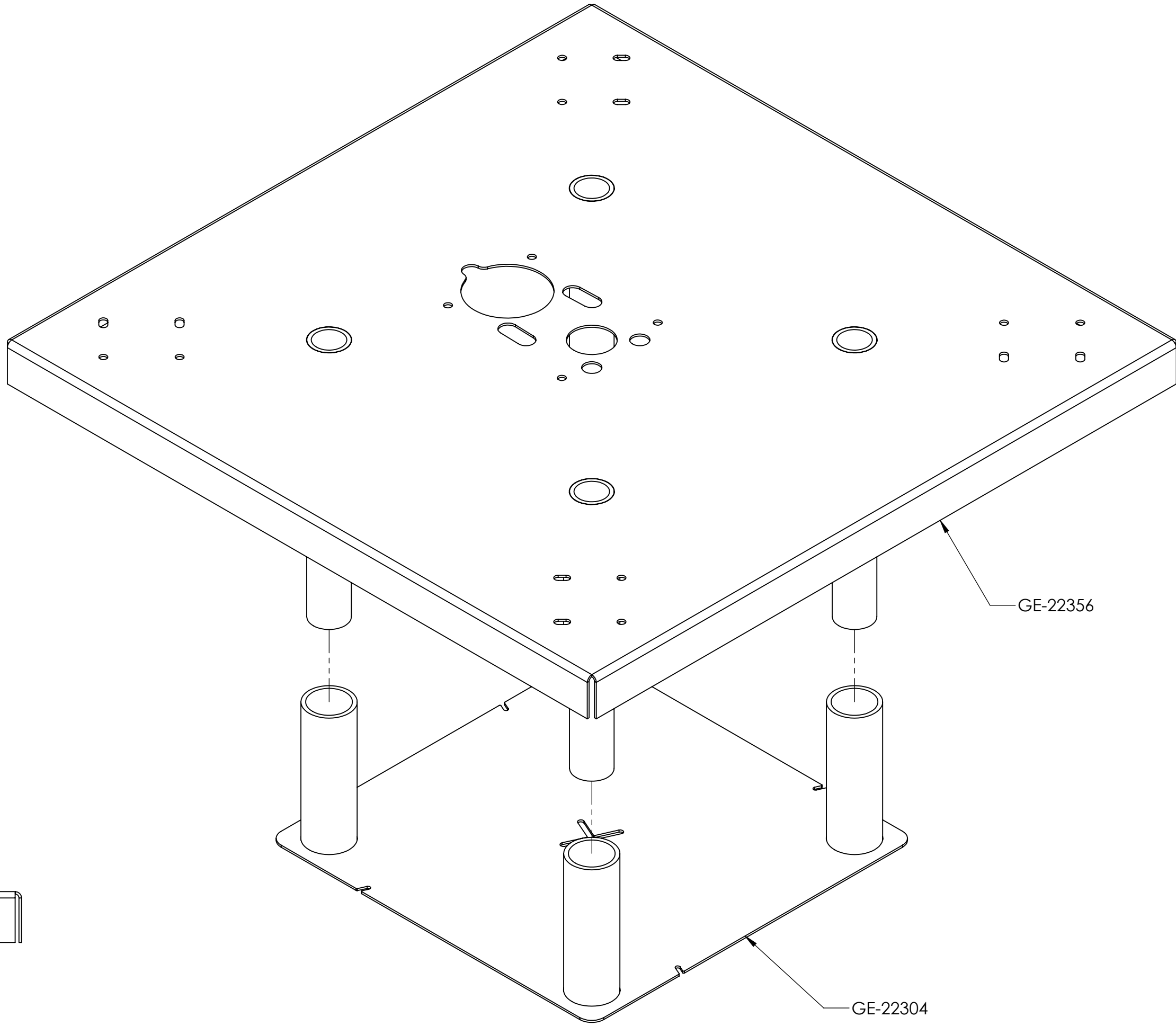




DETAIL E
SCALE 2 : 3

Bottom of two assemblies coincident.

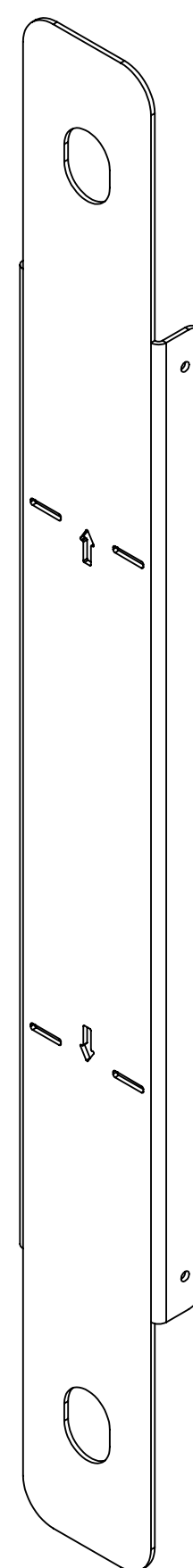
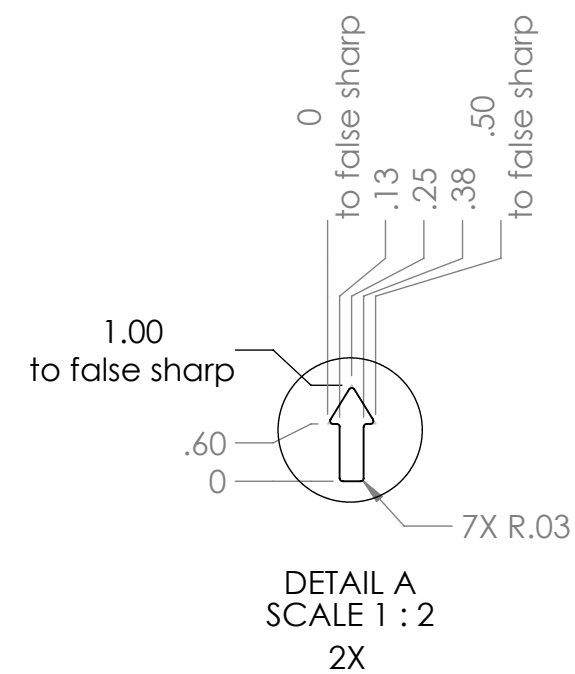
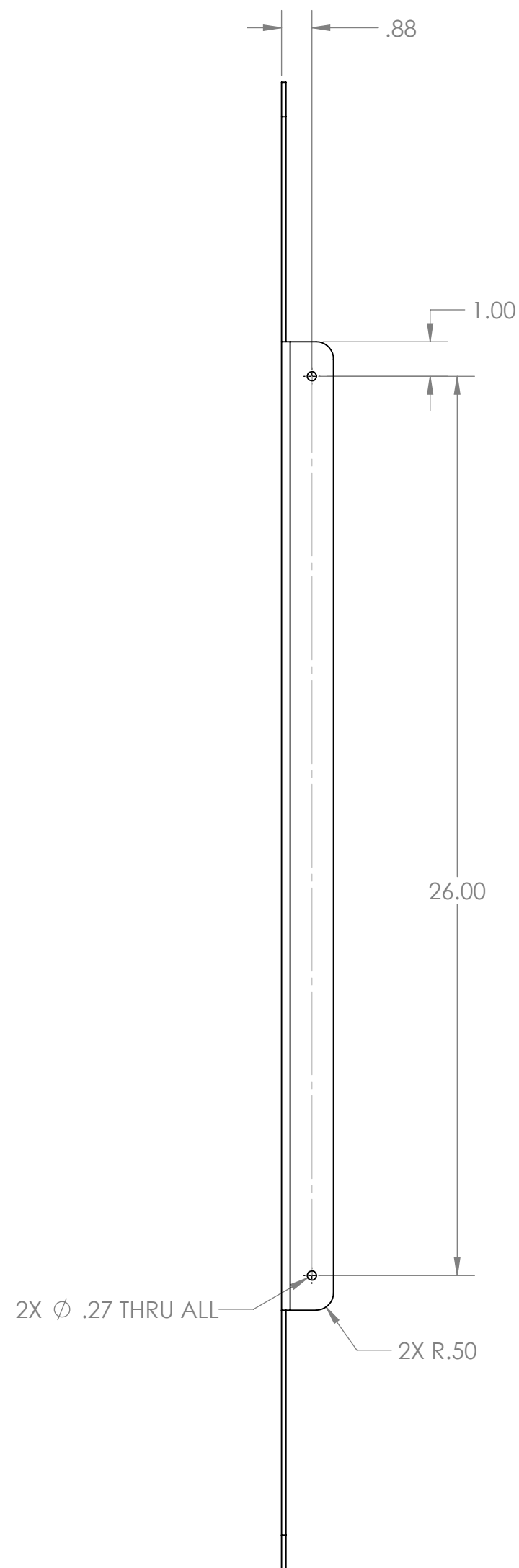


Notes:
1. For reference only: designed interface of GE-22304 with mating part.





UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>		
	DRAWN	CO	7/19/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub Base		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	MATERIAL/FINISH: Powder Coated Black	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING				C	GE-22304	
				SCALE: 1:3		SHEET 3 OF 3

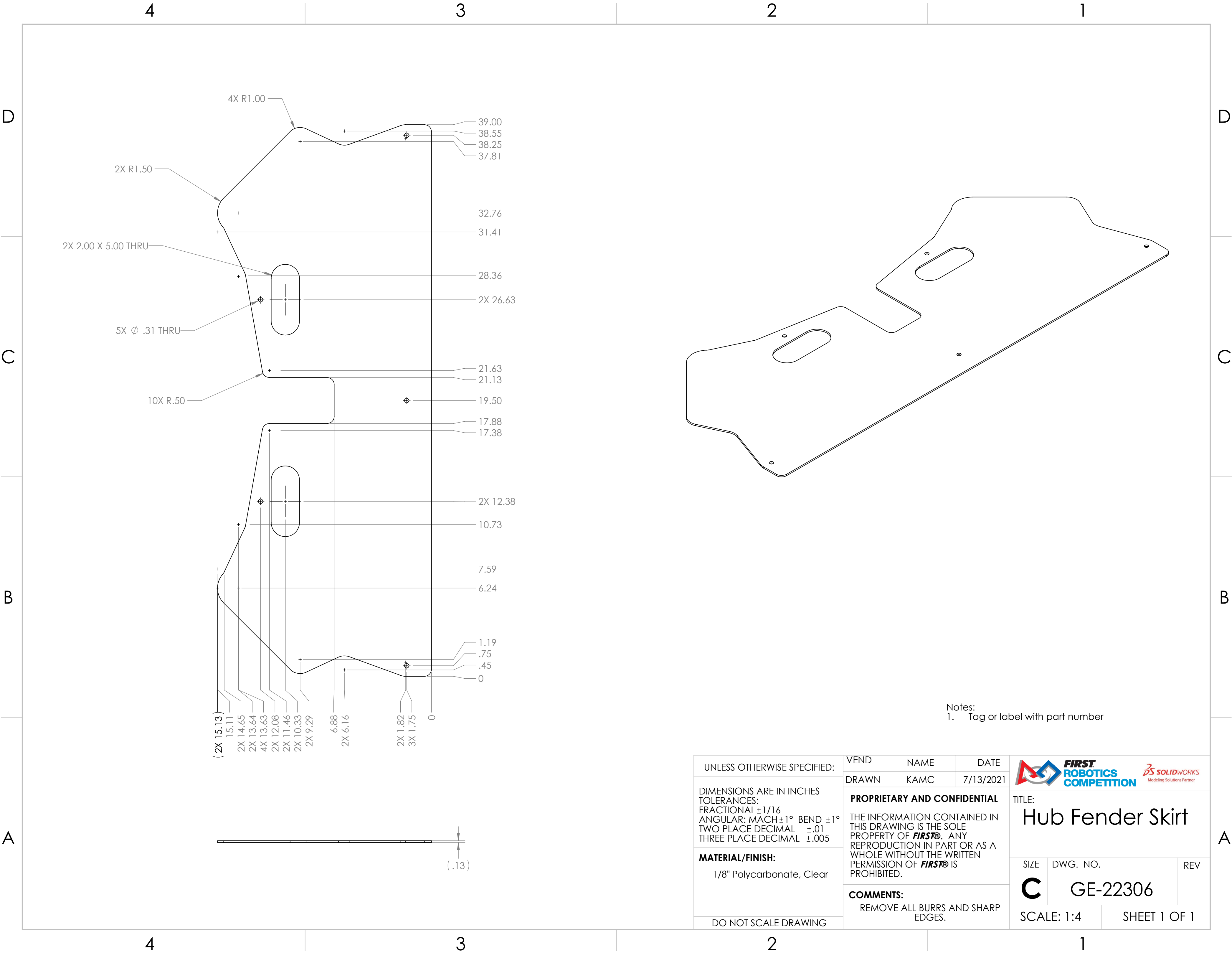
1





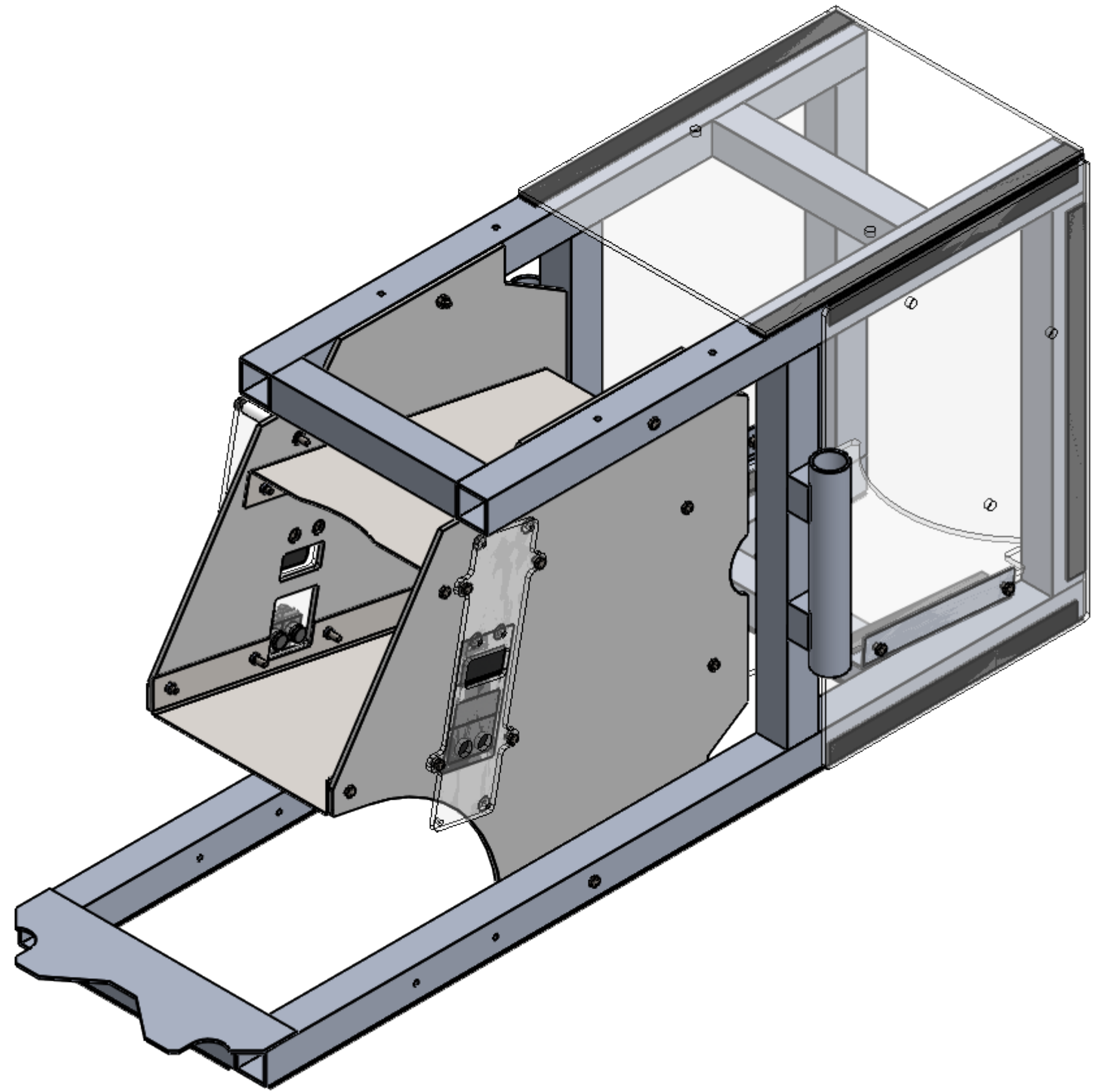
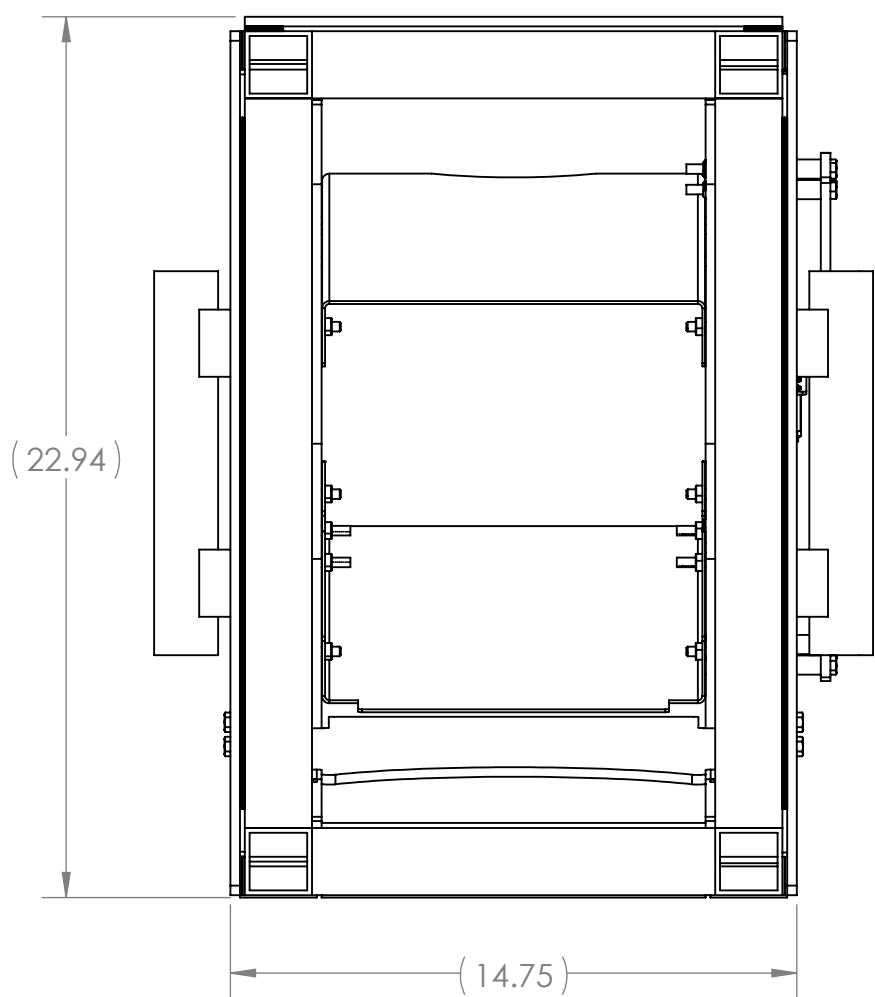
Notes:

1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	 		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: Leg Vertical Channel Cover		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22305	REV
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: Hub Fender Skirt</div>		
	DRAWN	KAMC	7/13/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			<div>SIZE</div> <div>C</div> <div>DWG. NO.</div> <div>GE-22306</div> <div>REV</div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS:					
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			<div>SCALE: 1:4</div> <div>SHEET 1 OF 1</div>		
1/8" Polycarbonate, Clear						
DO NOT SCALE DRAWING						



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22326	Lower Exit Left Polycarbonate Assembly	1
2	GE-22327	Lower Exit Right Polycarbonate Assembly	1
3	GE-22329	Lower Exit Front Roof with Loop	1
4	GE-22331	Lower Exit Front Ramp with Loop	1
5	GE-22332	Lower Exit HDPE Wall	2
6	GE-22333	Lower Exit Back Ramp	1
7	GE-22334	Lower Exit Back Roof	1
8	GE-22336	Lower Exit Frame with Hook	1
9	GE-22461	Sensor Box Assembly	1
10	GE-22466	Sensor Light Shield	1
11	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	8
12	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	8
13	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	4
14	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

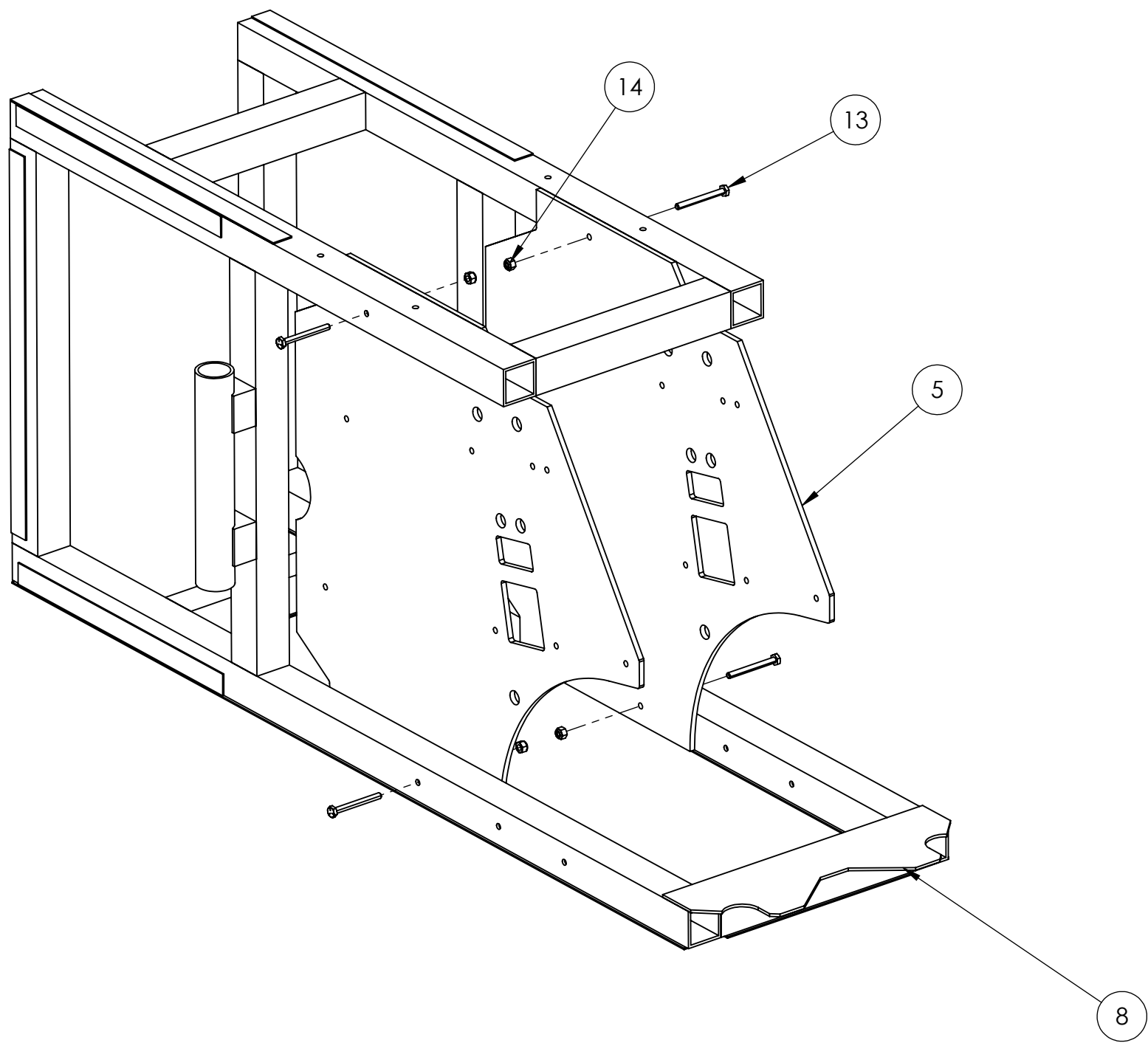
MATERIAL/FINISH:

DO NOT SCALE DRAWING

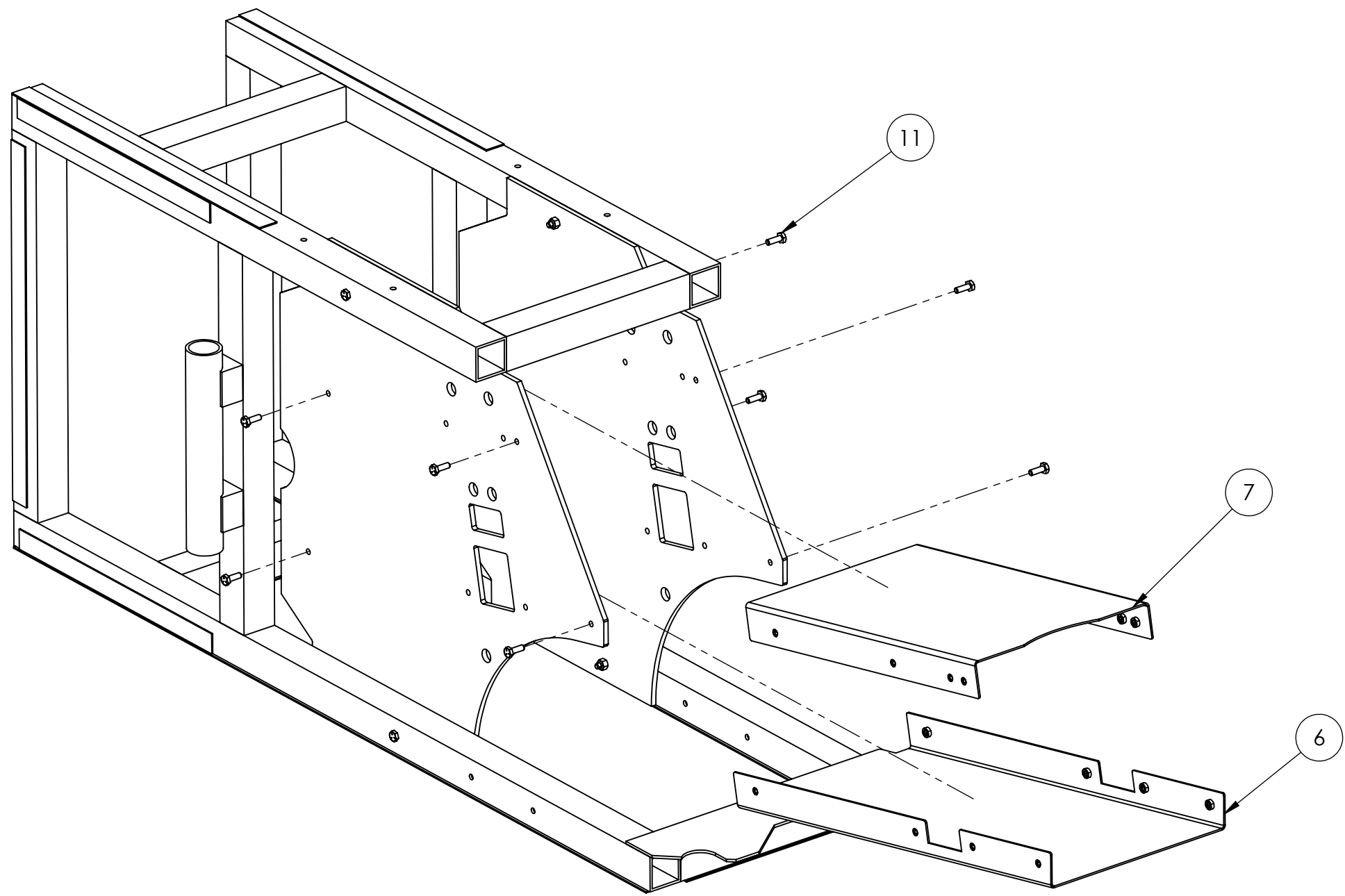
FIELD	NAME	DATE
DRAWN	CO	12/14/2021
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		



TITLE: Lower Exit Assembly		
SIZE C	DWG. NO. GE-22311	REV
SCALE: 1:5		SHEET 1 OF 4



- Notes:
- Slide (5) into place inside of (8) .
 - Fasten in place using (13) and (14) .

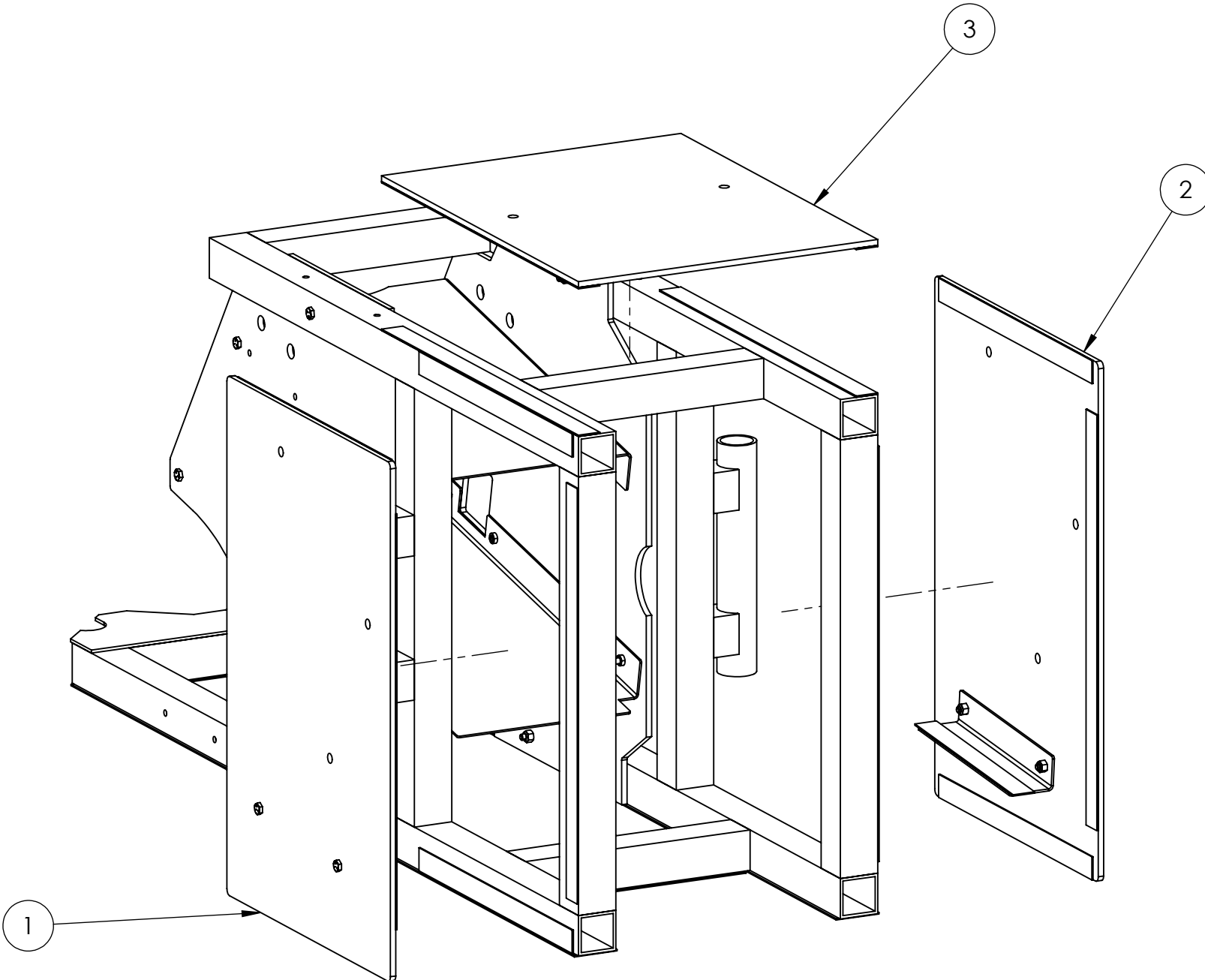


- Notes:
- Slide (6) and (7) into assembly as shown.
 - Fasten in place in locations shown using (11) .

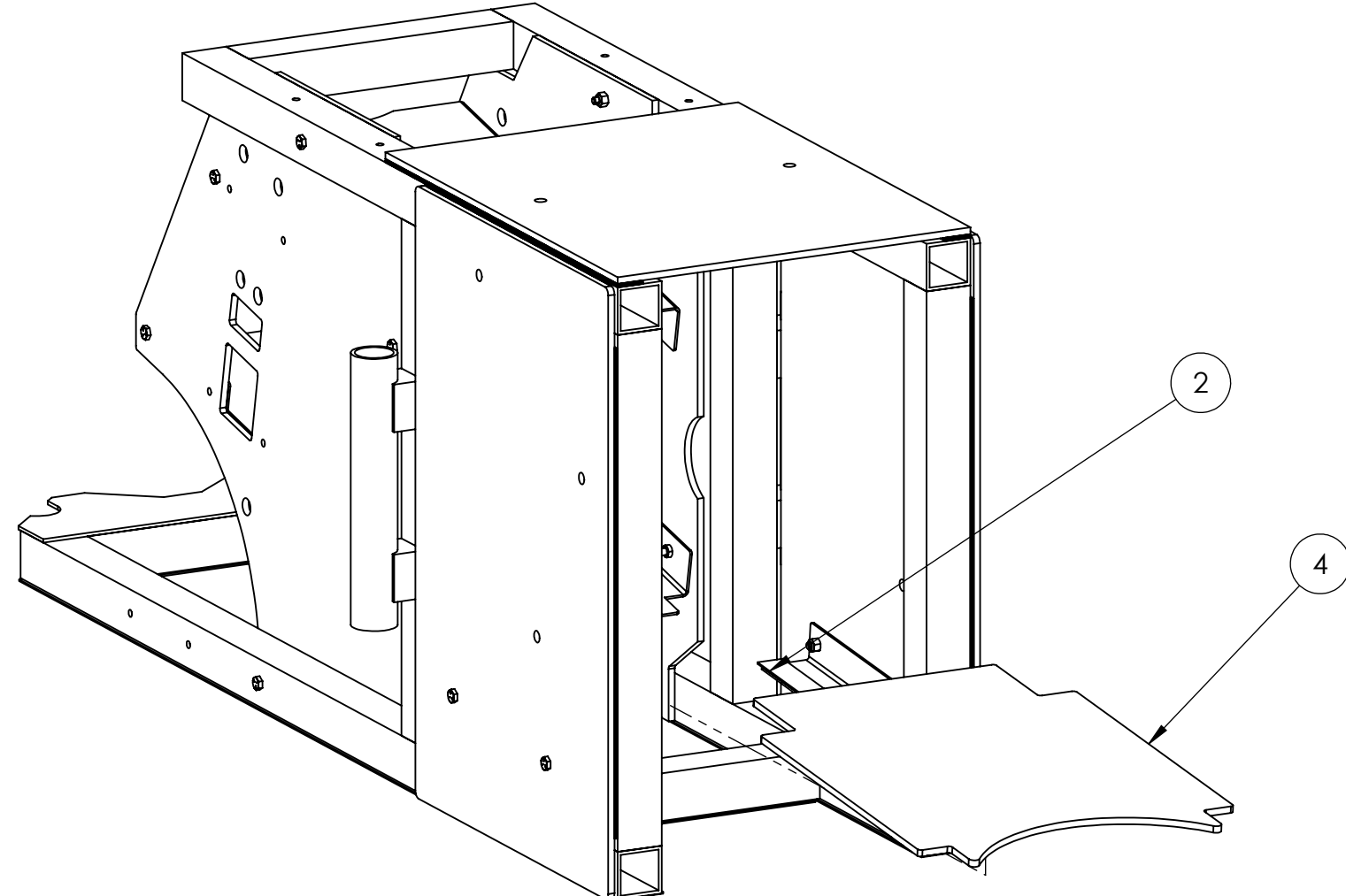
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	DRAWN	CO	12/14/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		





TITLE: Lower Exit Assembly		
SIZE C	DWG. NO. GE-22311	REV
SCALE: 1:6		SHEET 2 OF 4

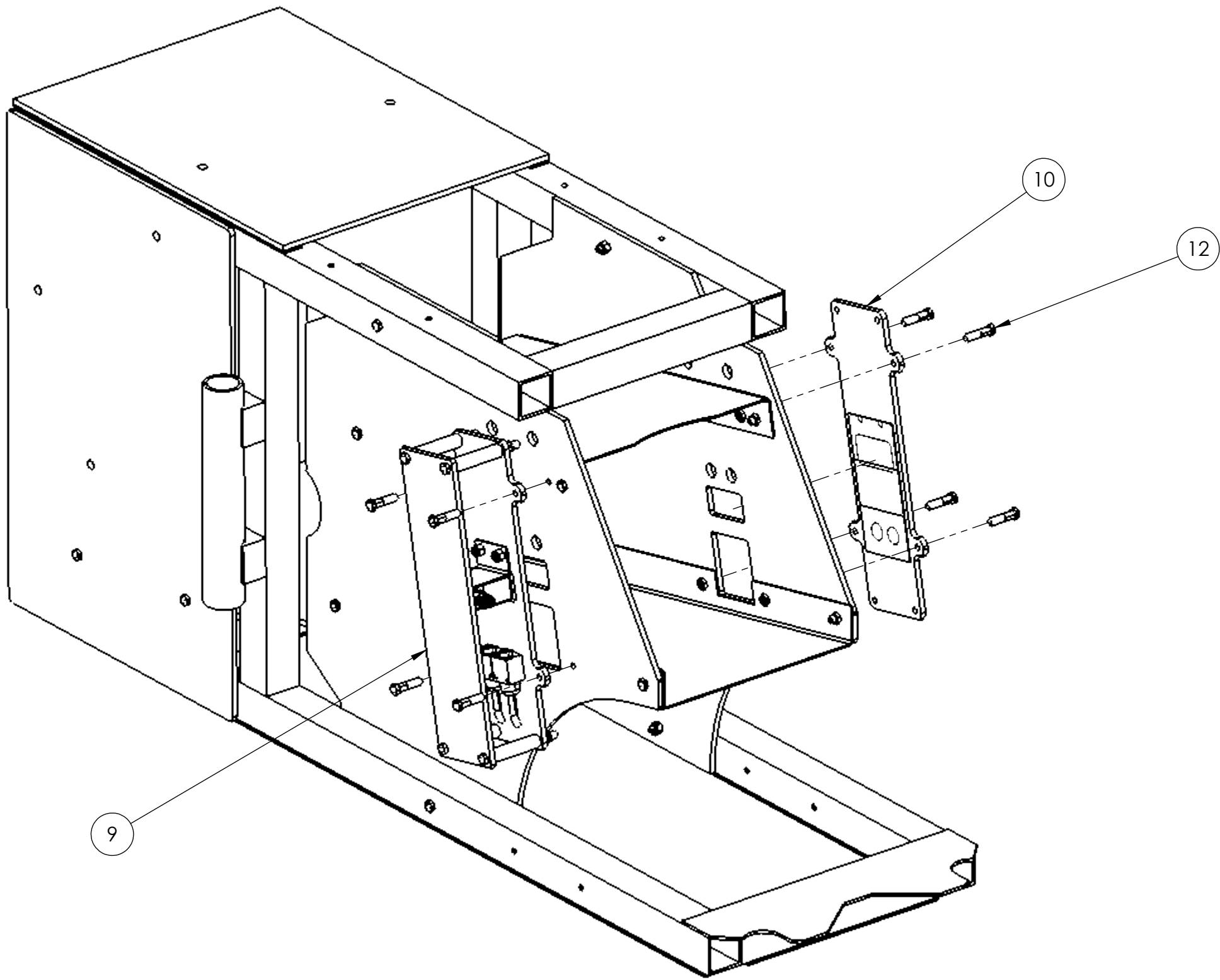


Notes:
1. Attach 1, 2, and 3 to assembly as shown using hook and loop and cable ties.



Notes:
1. Insert 4 into assembly and attach via fastening hook and loop on 2.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div></div><div>TITLE: Lower Exit Assembly</div></div>	
	DRAWN	CO	12/14/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			SIZE C	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:	COMMENTS:			DWG. NO.	
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			REV	
	SCALE: 1:6			GE-22311	
			SHEET 3 OF 4		



Notes:
1. Attach 9 and 10 to assembly using 12 .

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	CO	12/14/2021

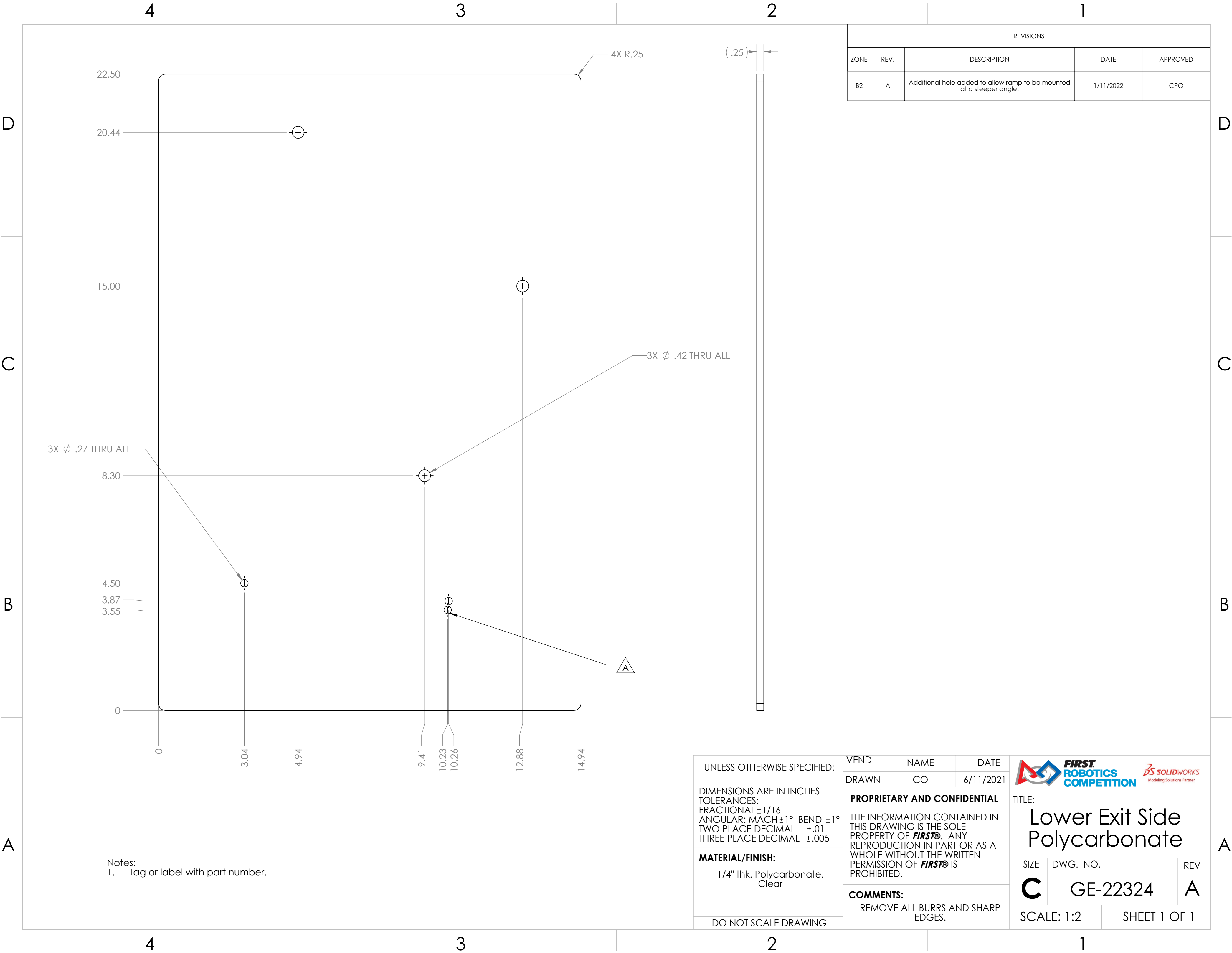
PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.



COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

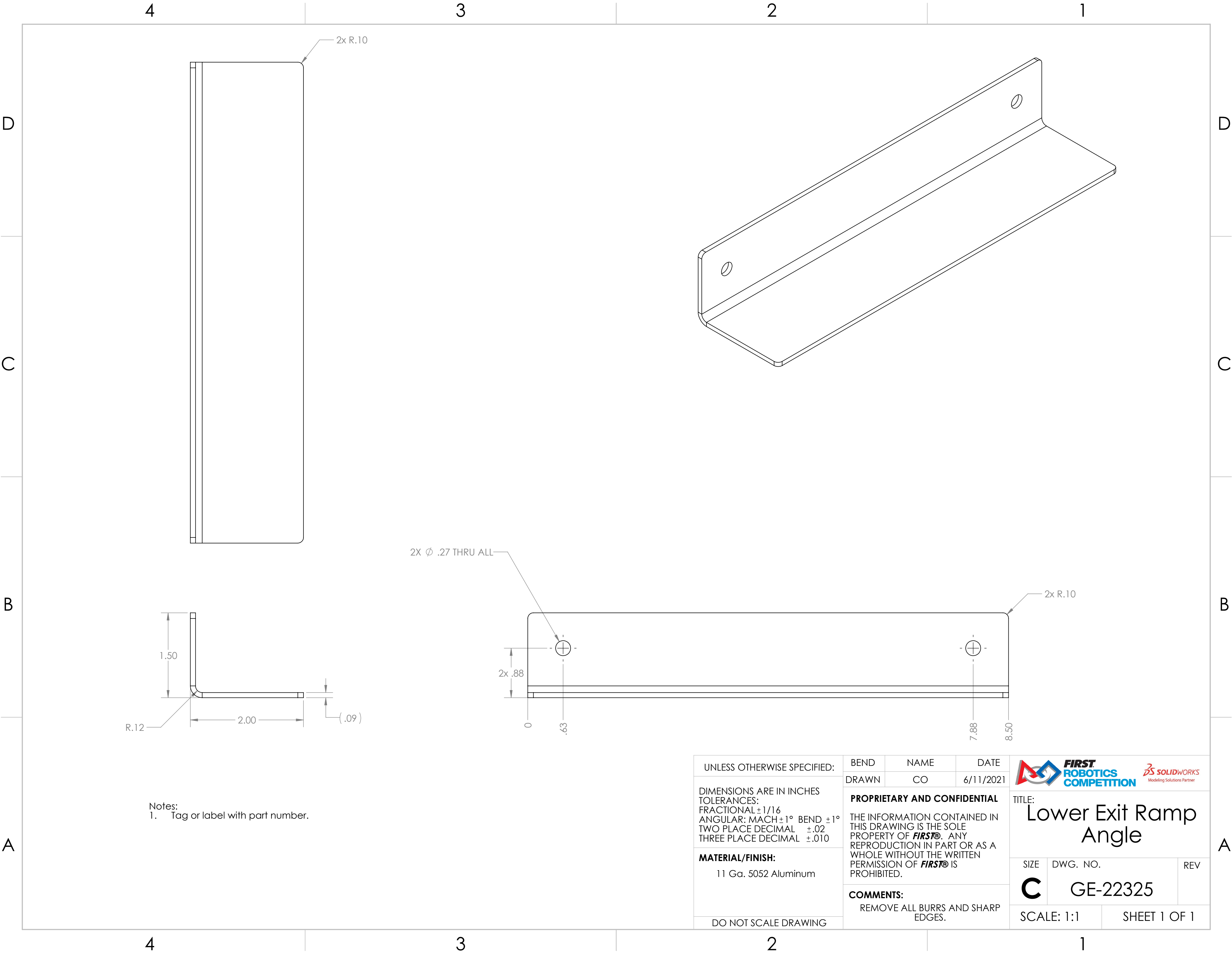


TITLE: Lower Exit Assembly		
SIZE C	DWG. NO. GE-22311	REV
SCALE: 1:5		SHEET 4 OF 4





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2	A	Additional hole added to allow ramp to be mounted at a steeper angle.	1/11/2022	CPO

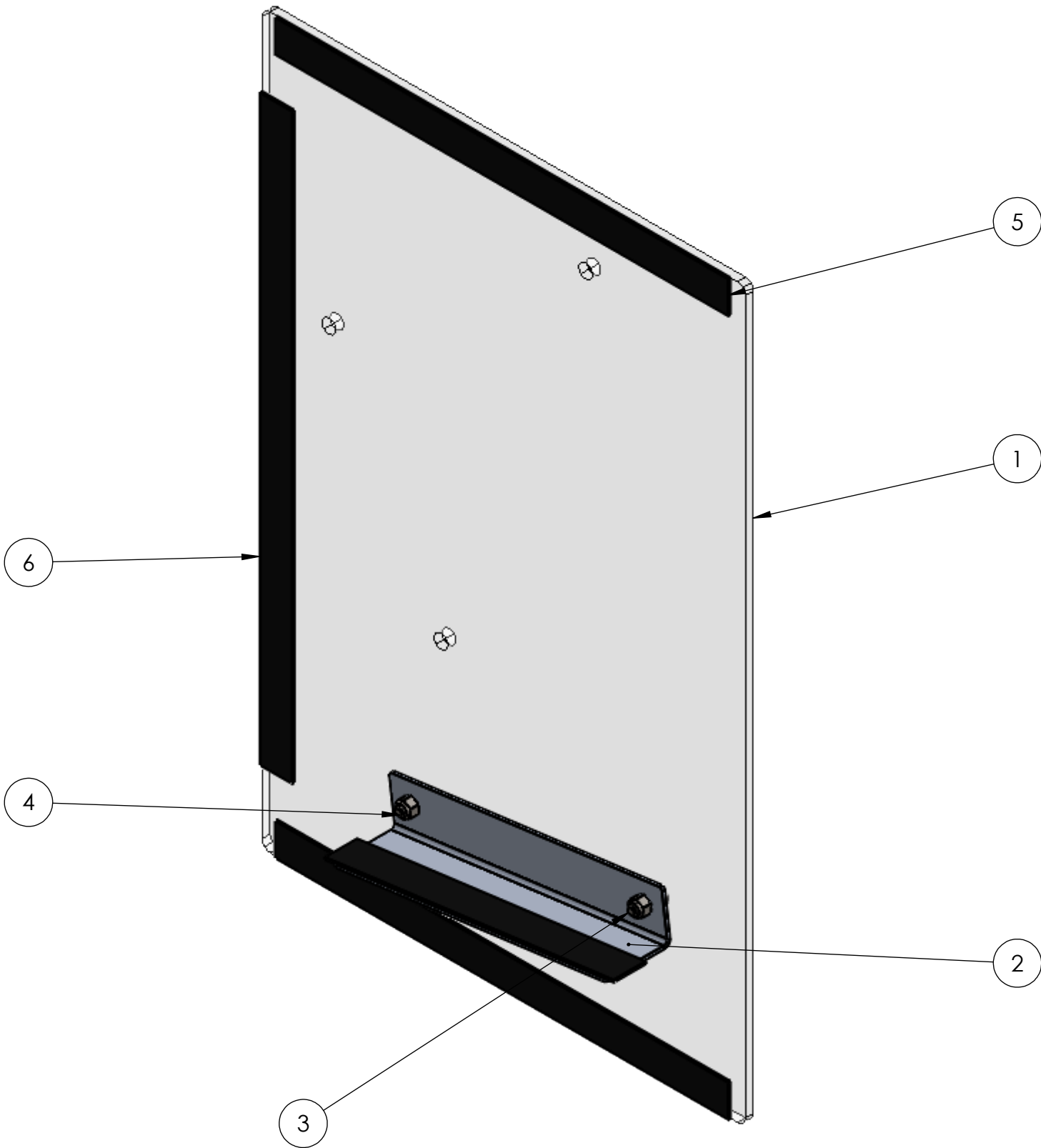
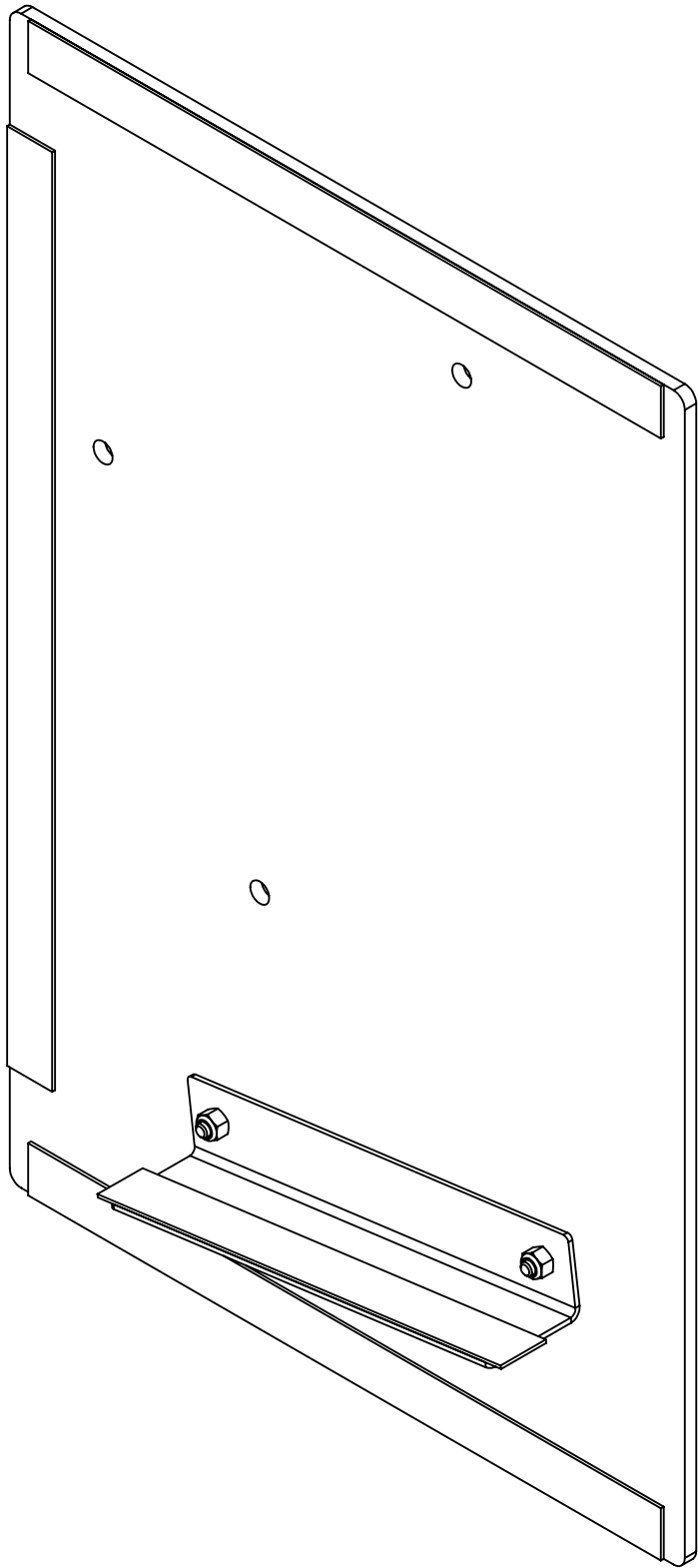
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	CO	6/11/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL			TITLE: Lower Exit Side Polycarbonate		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22324	A
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 11 Ga. 5052 Aluminum DO NOT SCALE DRAWING	BEND	NAME	DATE	 	
	DRAWN	CO	6/11/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Lower Exit Ramp Angle	
COMMENTS:		SIZE	DWG. NO.	REV	
REMOVE ALL BURRS AND SHARP EDGES.		C	GE-22325		
		SCALE: 1:1		SHEET 1 OF 1	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-C4	A	Added note to reflect update to GE-22324 done to mount ramp at a steeper angle.	1/11/2022	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	Qty.
1	GE-22324	Lower Exit Side Polycarbonate	1
2	GE-22337	Lower Exit Ramp Angle with Hook	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2
5	Loop_1_14	1" x 14" Loop, Adhesive Backed	2
6	Loop_1_18	1" x 18" Loop, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:



DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	10/27/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Lower Exit Left Polycarbonate Assembly

SIZE	DWG. NO.	REV
C	GE-22326	A

SCALE: 1:3	SHEET 1 OF 2
------------	--------------

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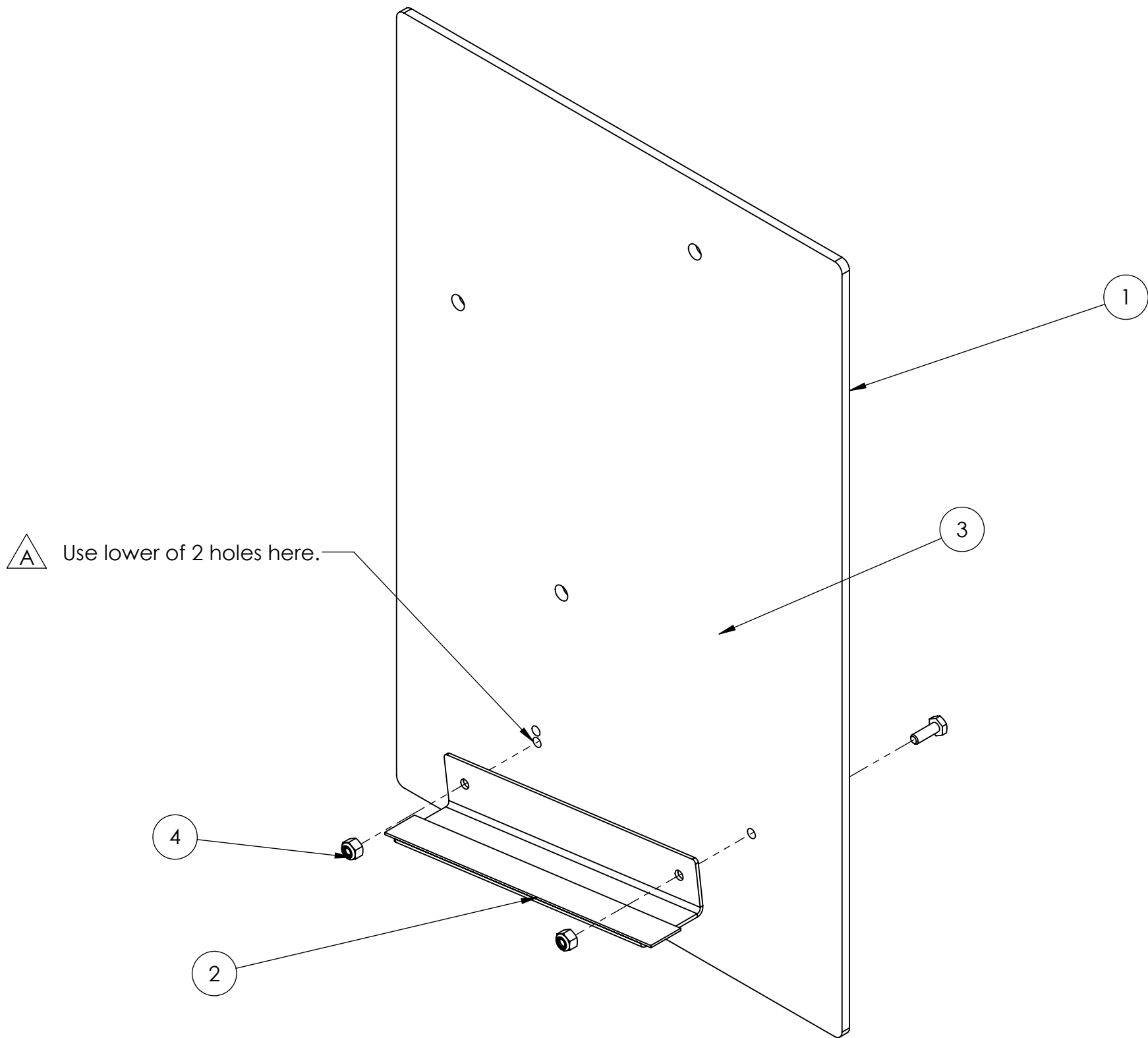
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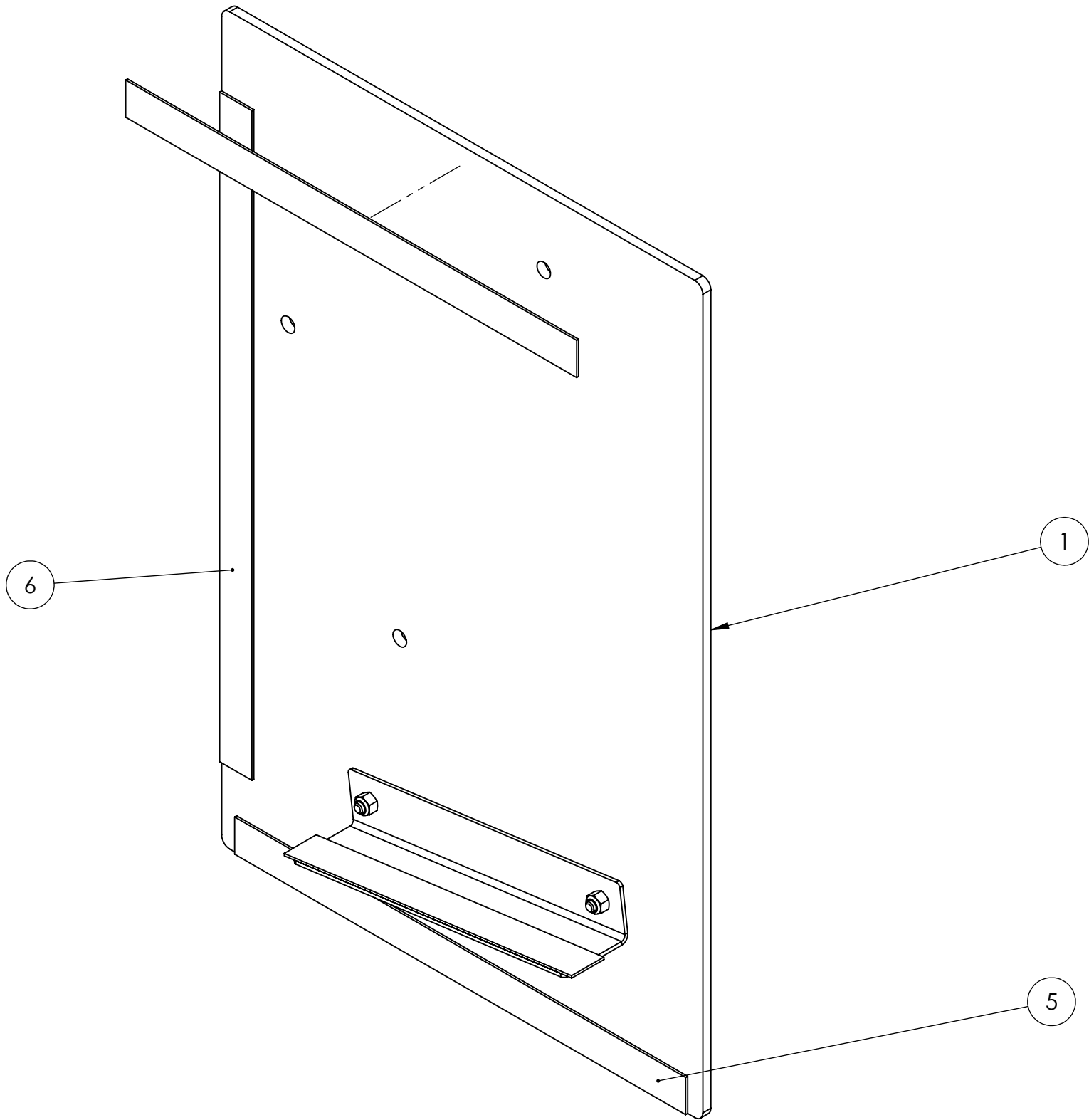
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Notes:

1. Attach (2) to (1) using (3) and (4) . Note hole orientation of (1) .



Notes:

1. Clean and prep (1) .
2. Attach (5) and (6) to (1) in positions shown.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	10/27/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit Left Polycarbonate Assembly	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
			SIZE	DWG. NO.	REV
			C	GE-22326	A
			SCALE: 1:3		SHEET 2 OF 2

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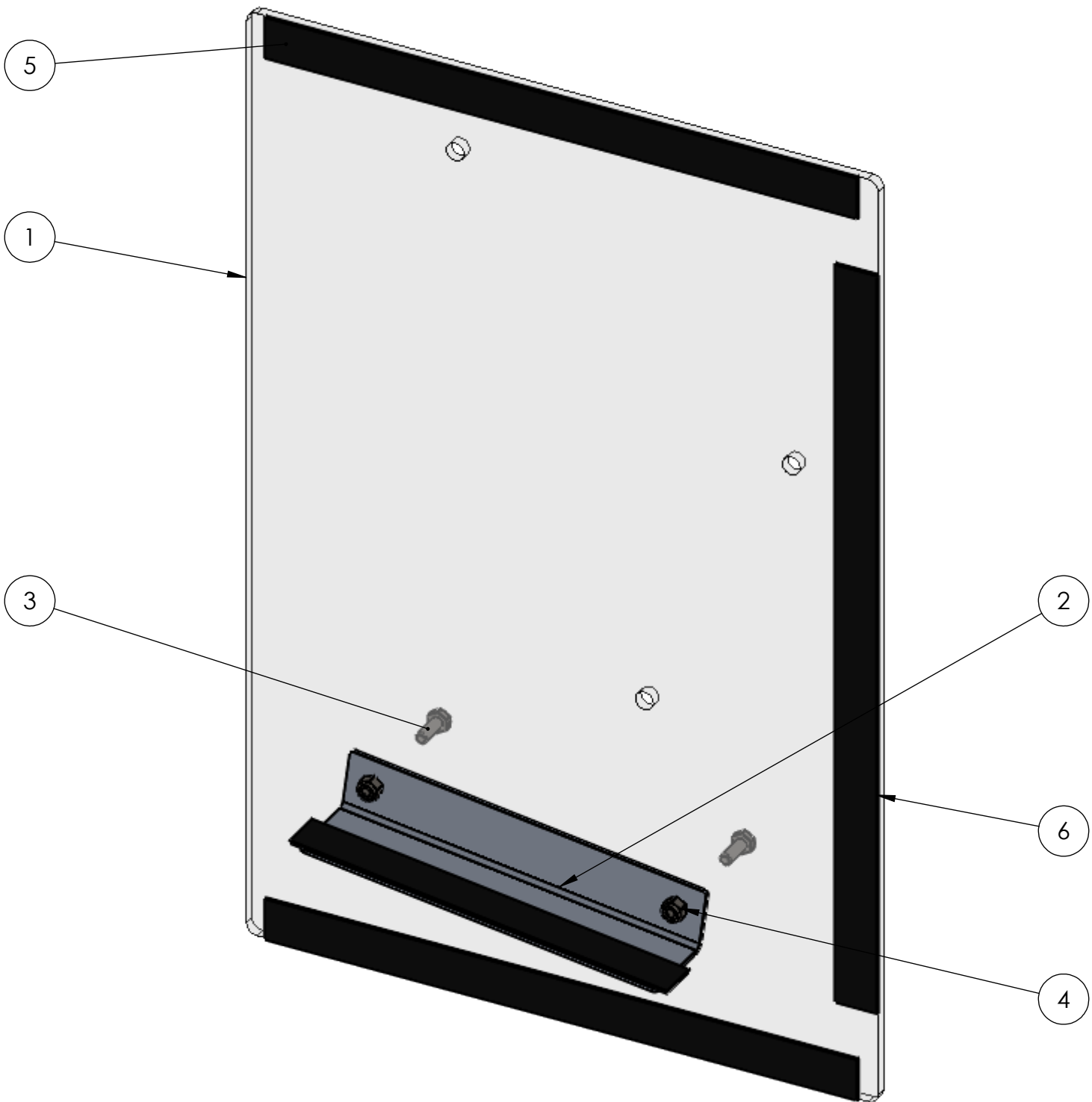
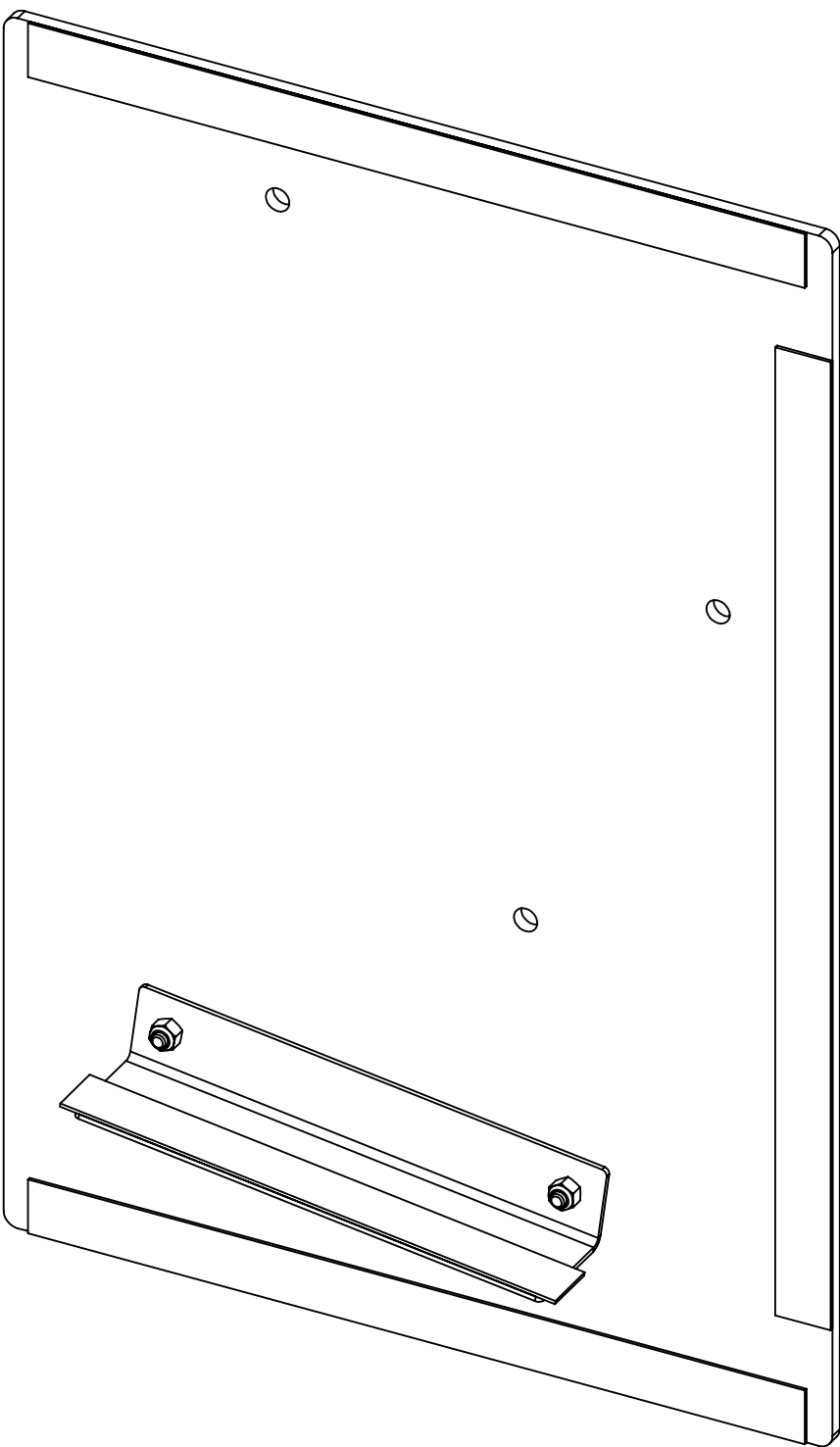
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-B3	A	Added note to reflect update to GE-22324 done to mount ramp at a steeper angle.	1/11/2022	CPO





ITEM NO.	PART NUMBER	DESCRIPTION	Qty.
1	GE-22324	Lower Exit Side Polycarbonate	1
2	GE-22337	Lower Exit Ramp Angle with Hook	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2
5	Loop_1_14	1" x 14" Loop, Adhesive Backed	2
6	Loop_1_18	1" x 18" Loop, Adhesive Backed	1

4

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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	10/27/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Lower Exit Right Polycarbonate Assembly	
SIZE		DWG. NO.		REV	
C		GE-22327		A	
SCALE: 1:3			SHEET 1 OF 2		

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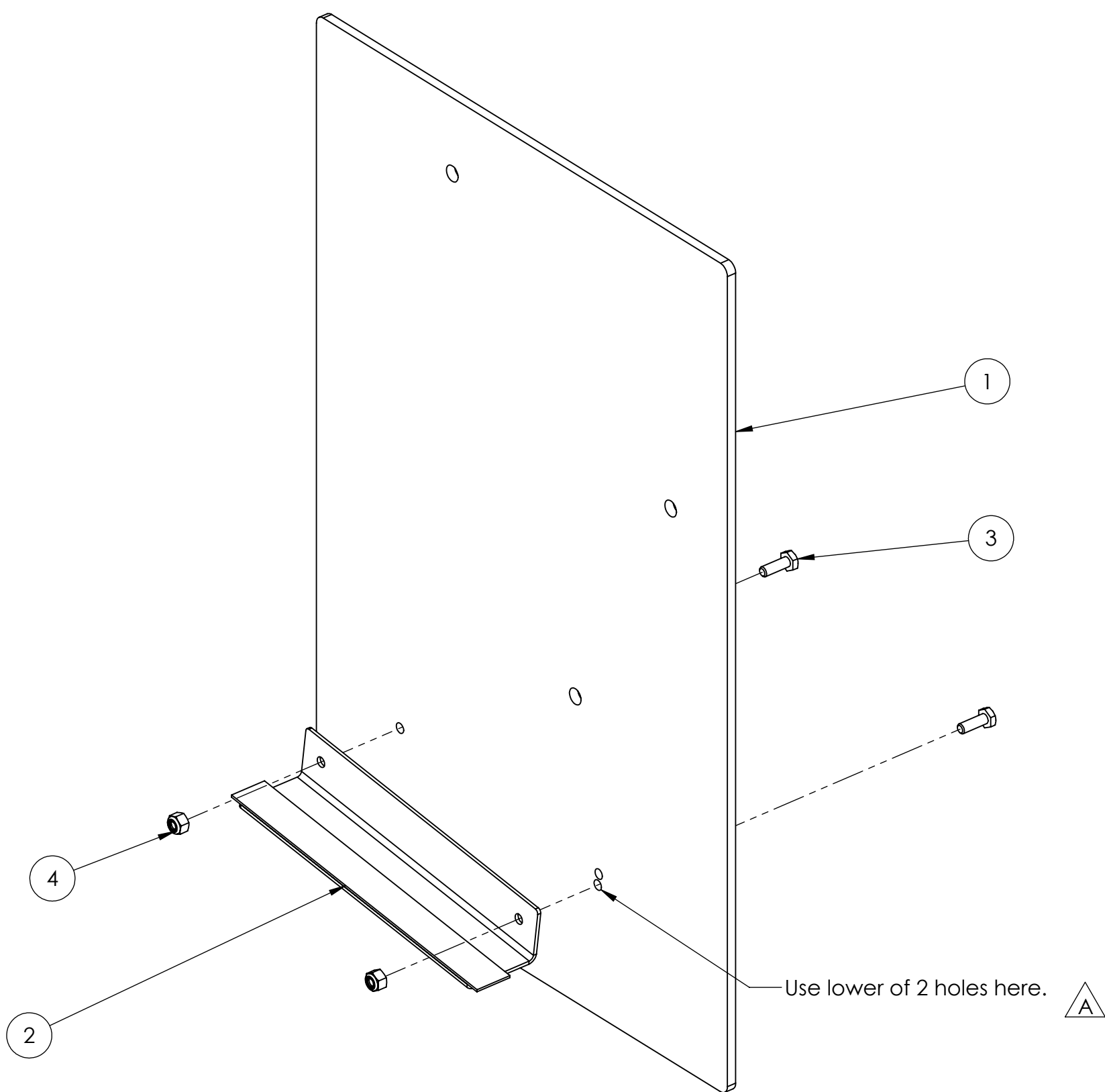
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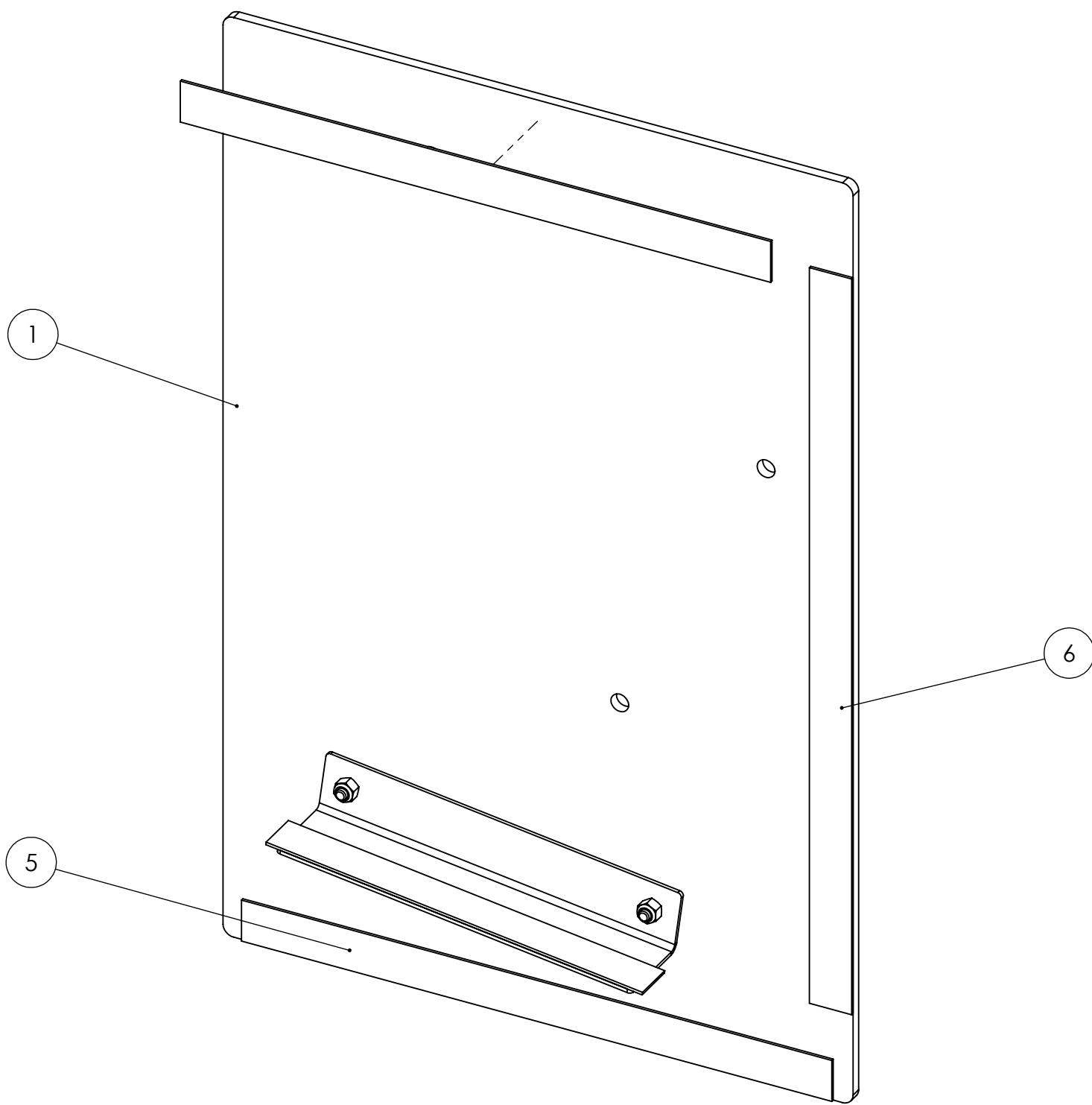
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- Notes:
1. Attach (2) to (1) using (3) and (4) . Note hole orientation of (1) .



- Notes:
1. Clean and prep (1) .
 2. Attach (5) and (6) to (1) in positions shown.

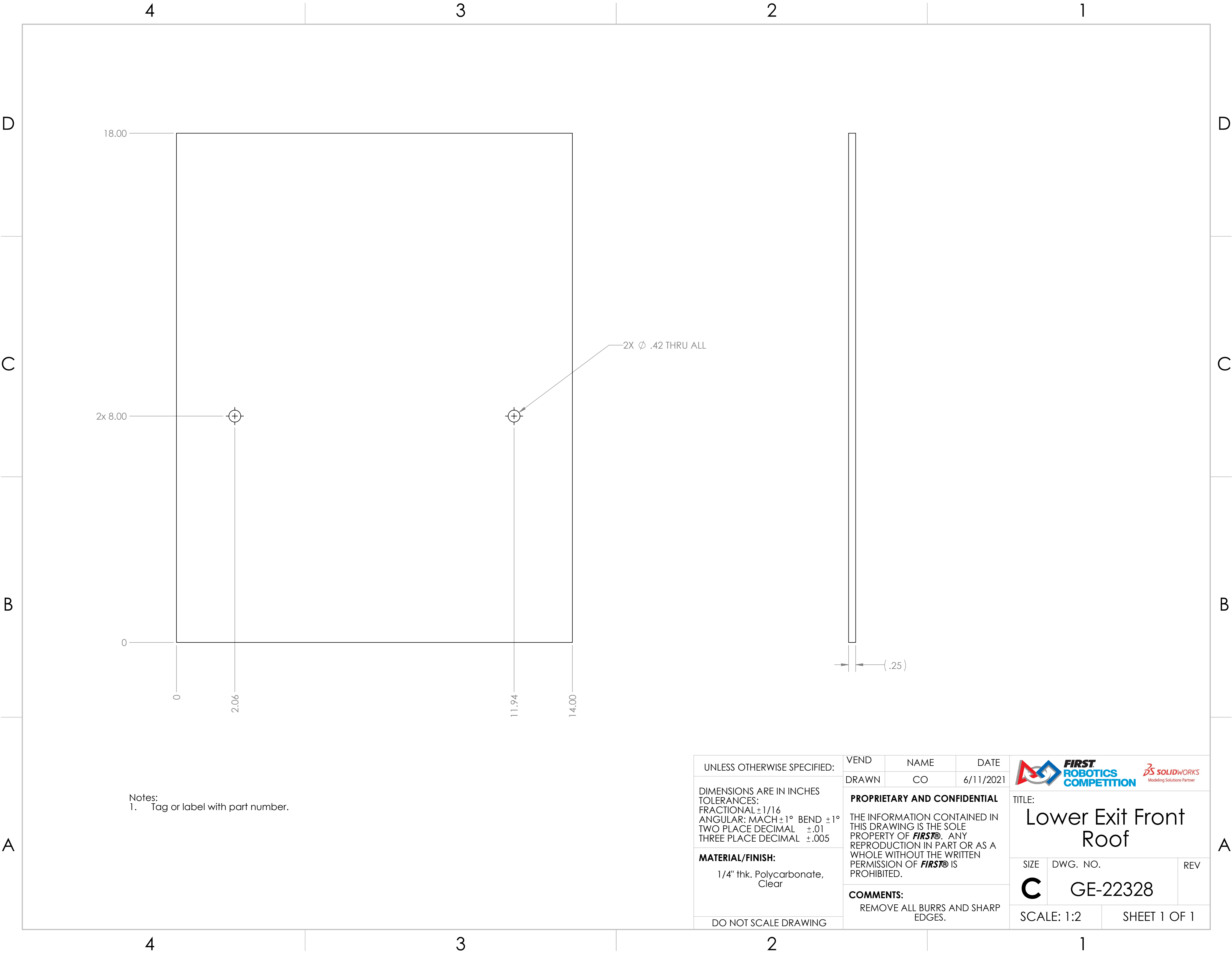
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	DRAWN	CO	10/27/2021	TITLE: Lower Exit Right Polycarbonate Assembly	
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE DWG. NO. REV	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C GE-22327 A	
DO NOT SCALE DRAWING				SCALE: 1:3	SHEET 2 OF 2

4



3

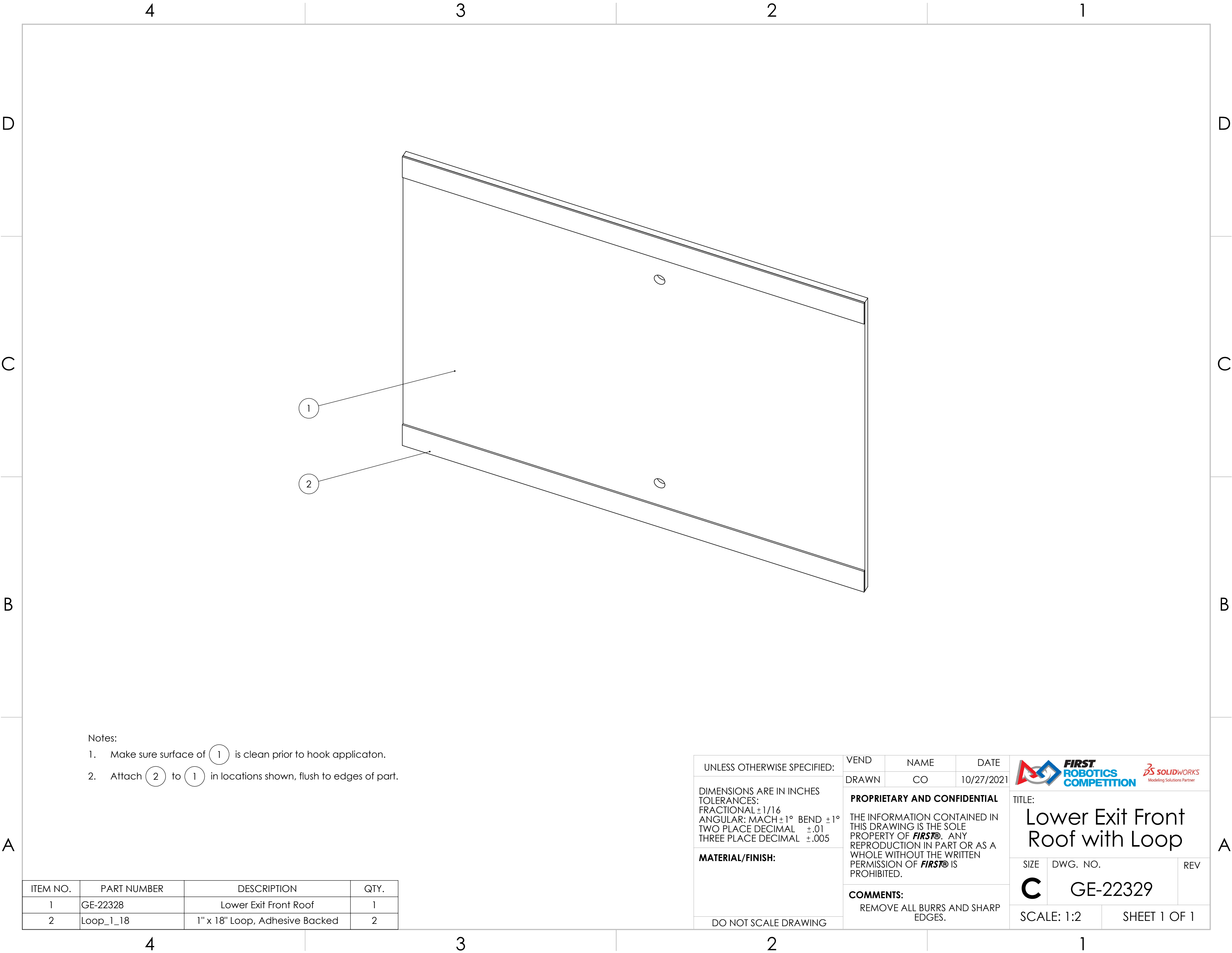
2

1





Notes:
1. Tag or label with part number.

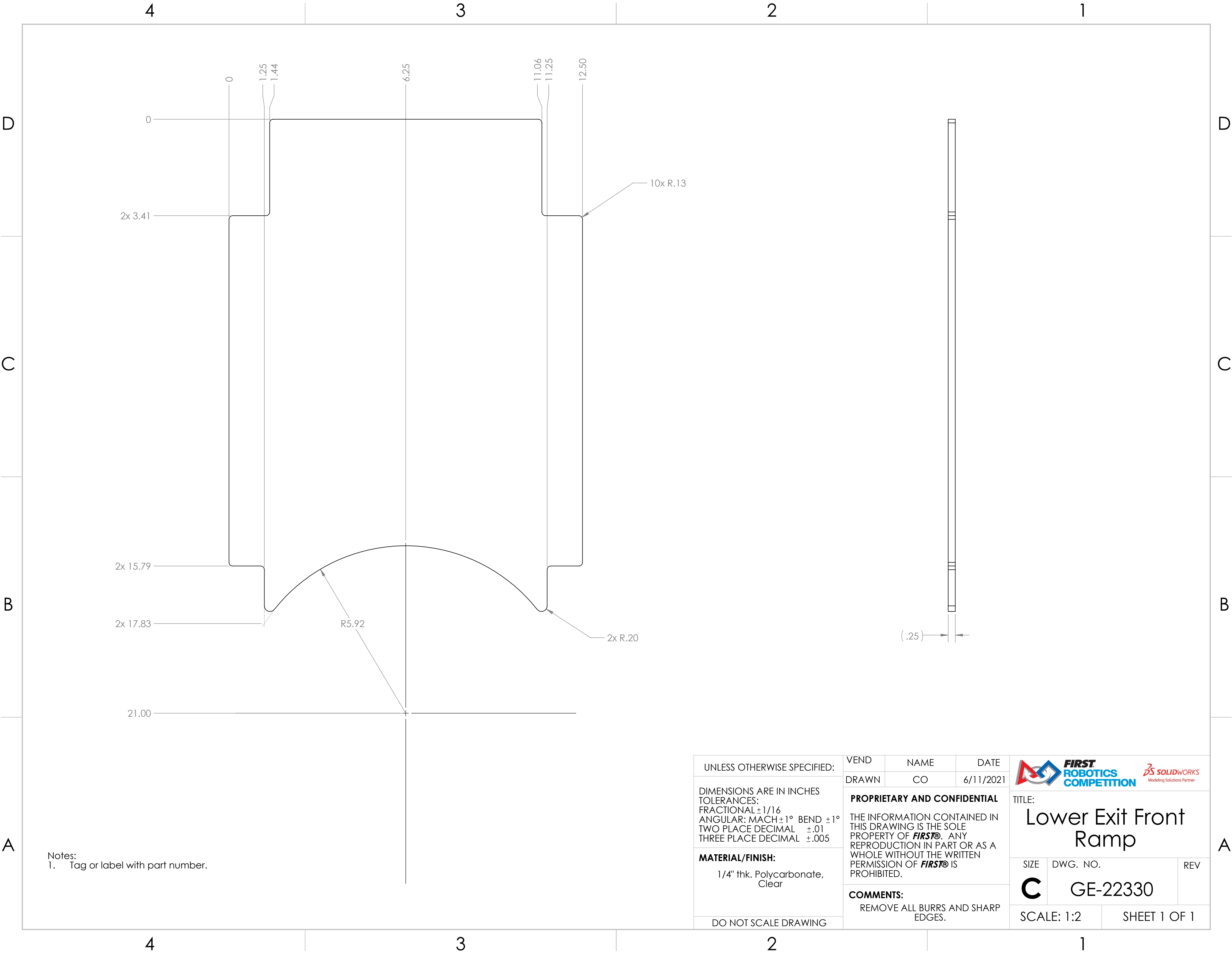
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	DRAWN	CO	6/11/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
				SIZE	DWG. NO.	REV
				C	GE-22328	
				SCALE: 1:2		SHEET 1 OF 1



- Notes:
- 1. Make sure surface of (1) is clean prior to hook applicaton.
 - 2. Attach (2) to (1) in locations shown, flush to edges of part.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22328	Lower Exit Front Roof	1
2	Loop_1_18	1" x 18" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 		
	DRAWN	CO	10/27/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit Front Roof with Loop		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22329	REV
				SCALE: 1:2		SHEET 1 OF 1



D

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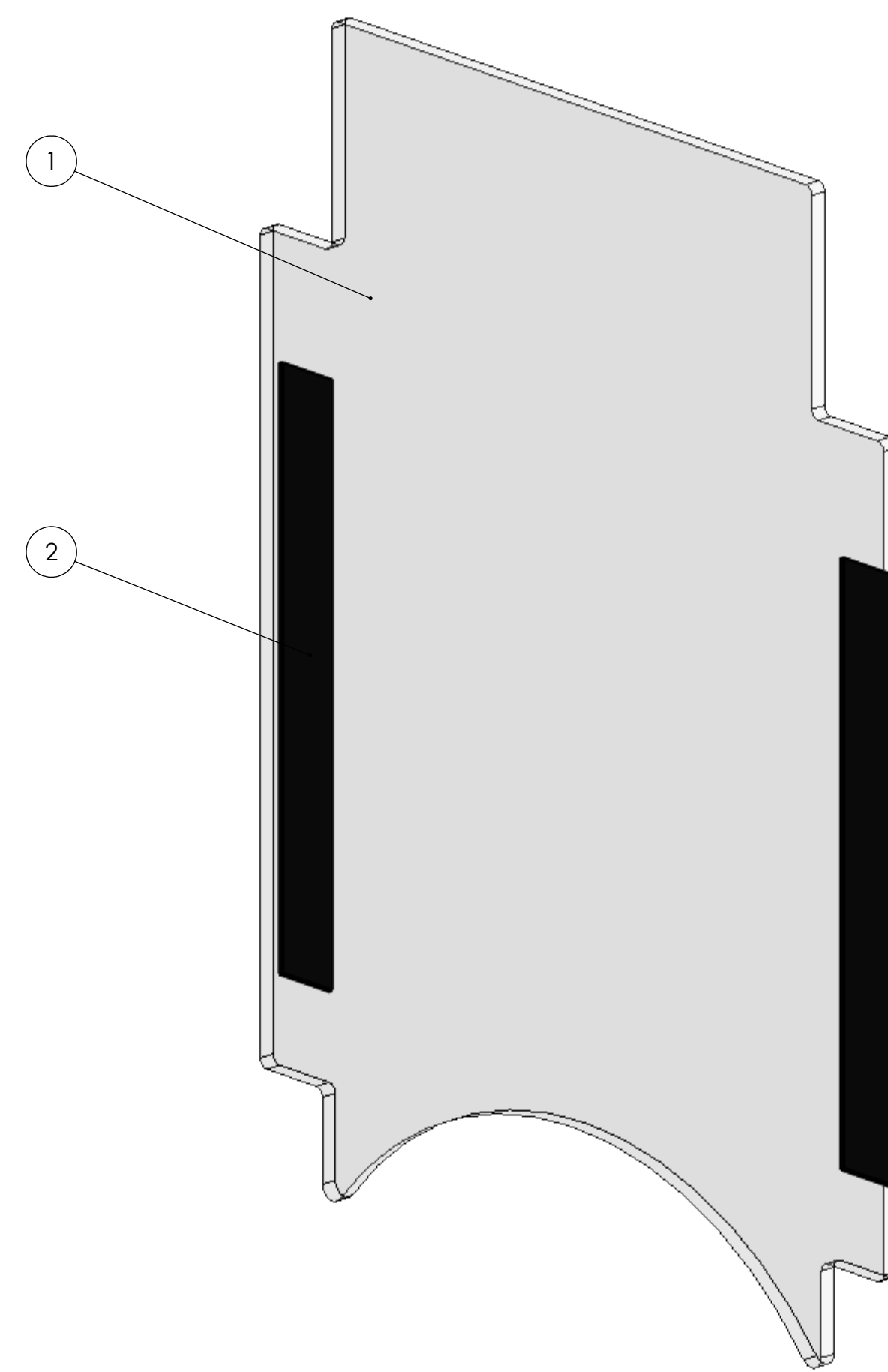
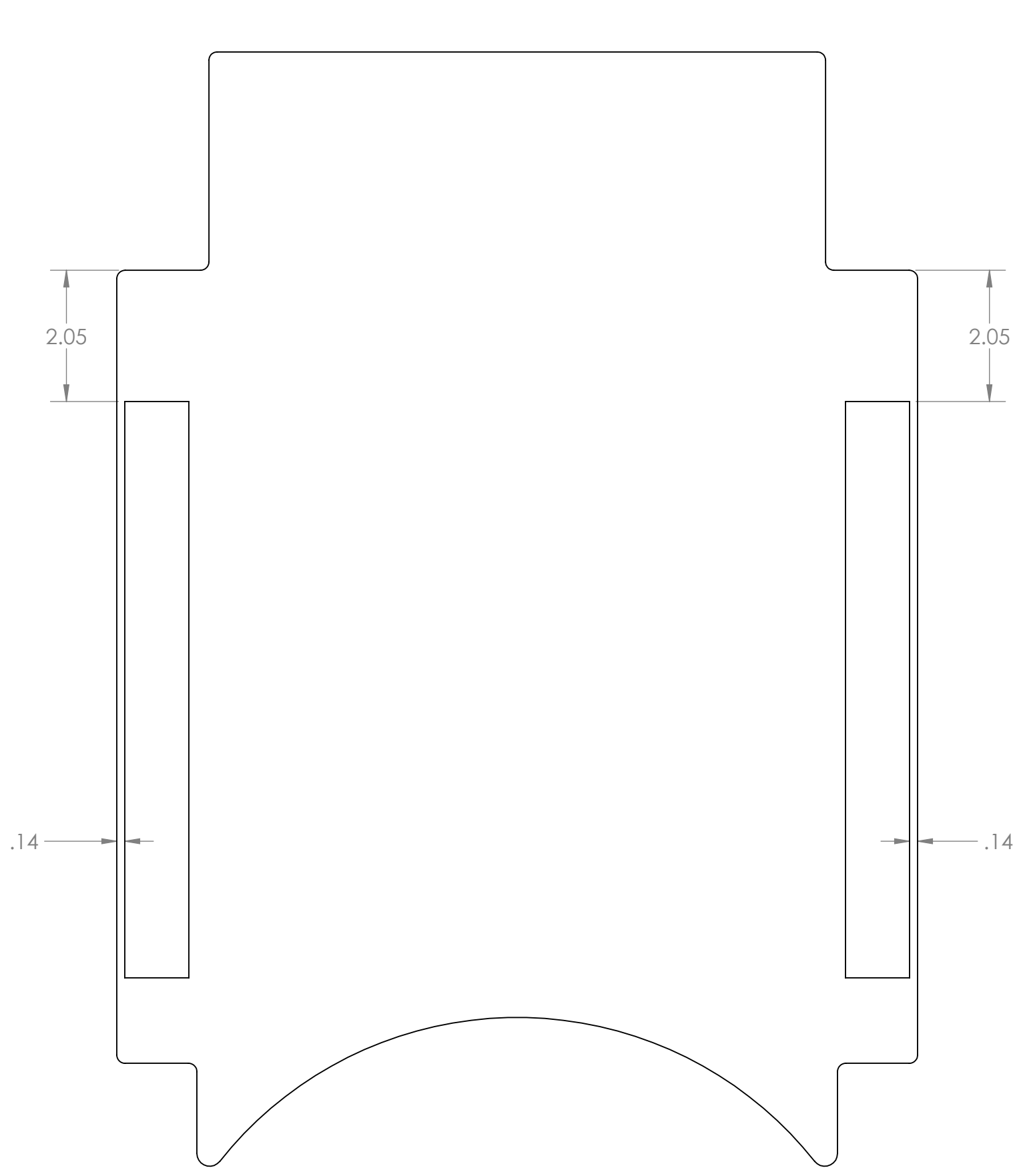
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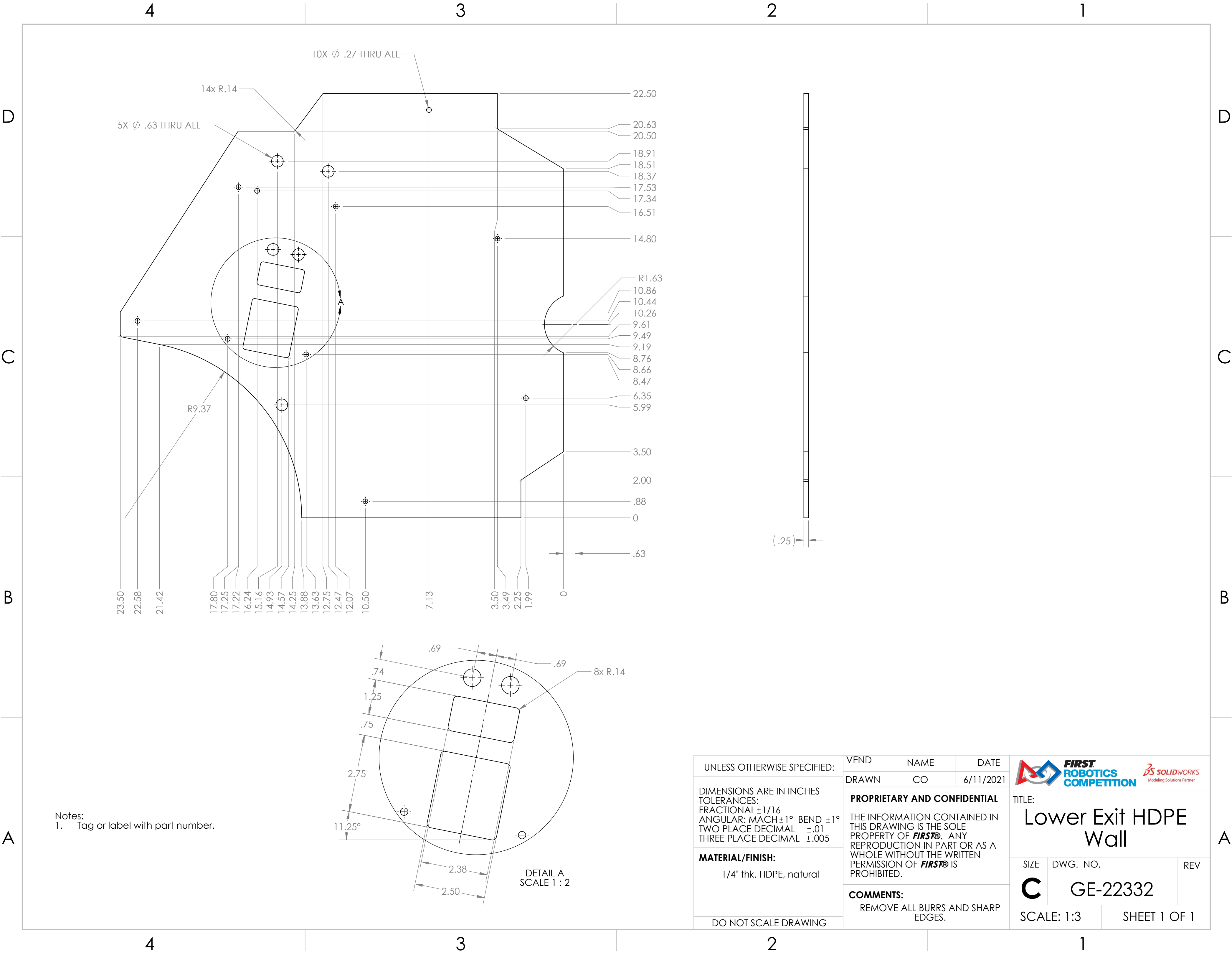


Notes:

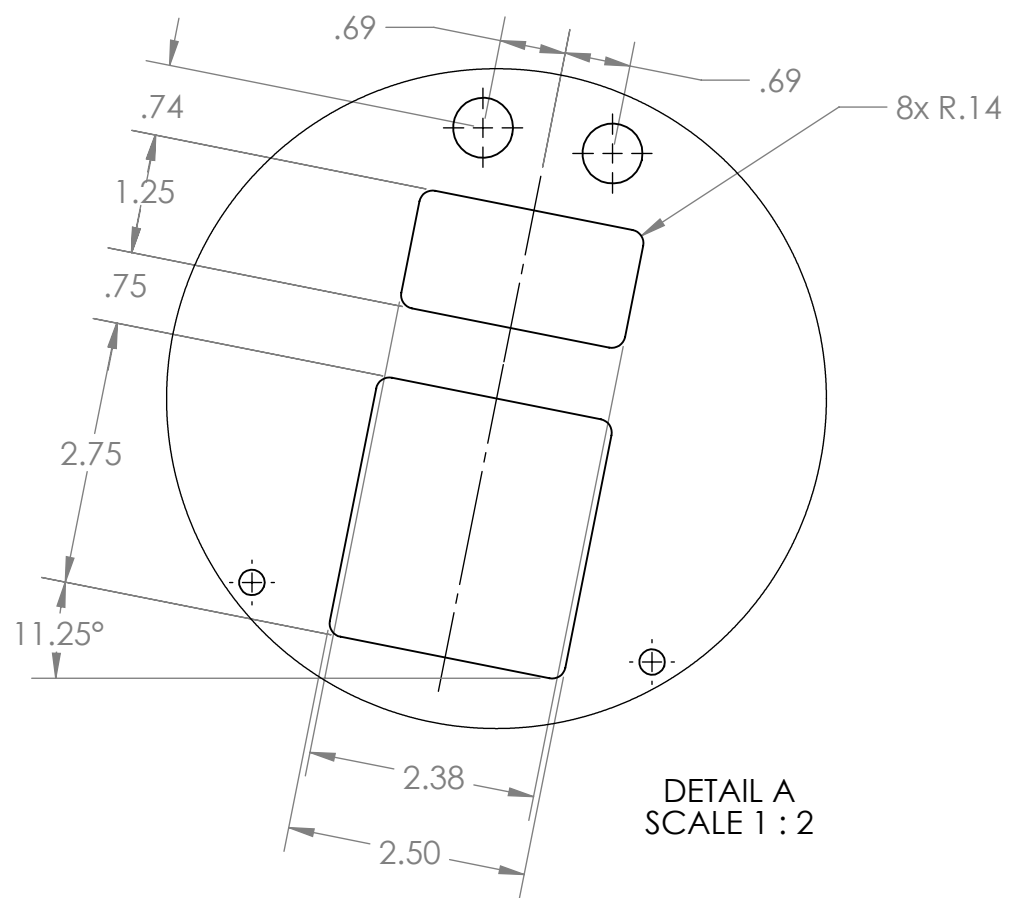
1. Make sure surface of (1) is clean prior to hook applicaton.
2. Attach (2) to (1) in locations shown.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22330	Lower Exit Front Ramp	1
2	Loop_1_9	1" x 9" Loop, Adhesive Backed	2

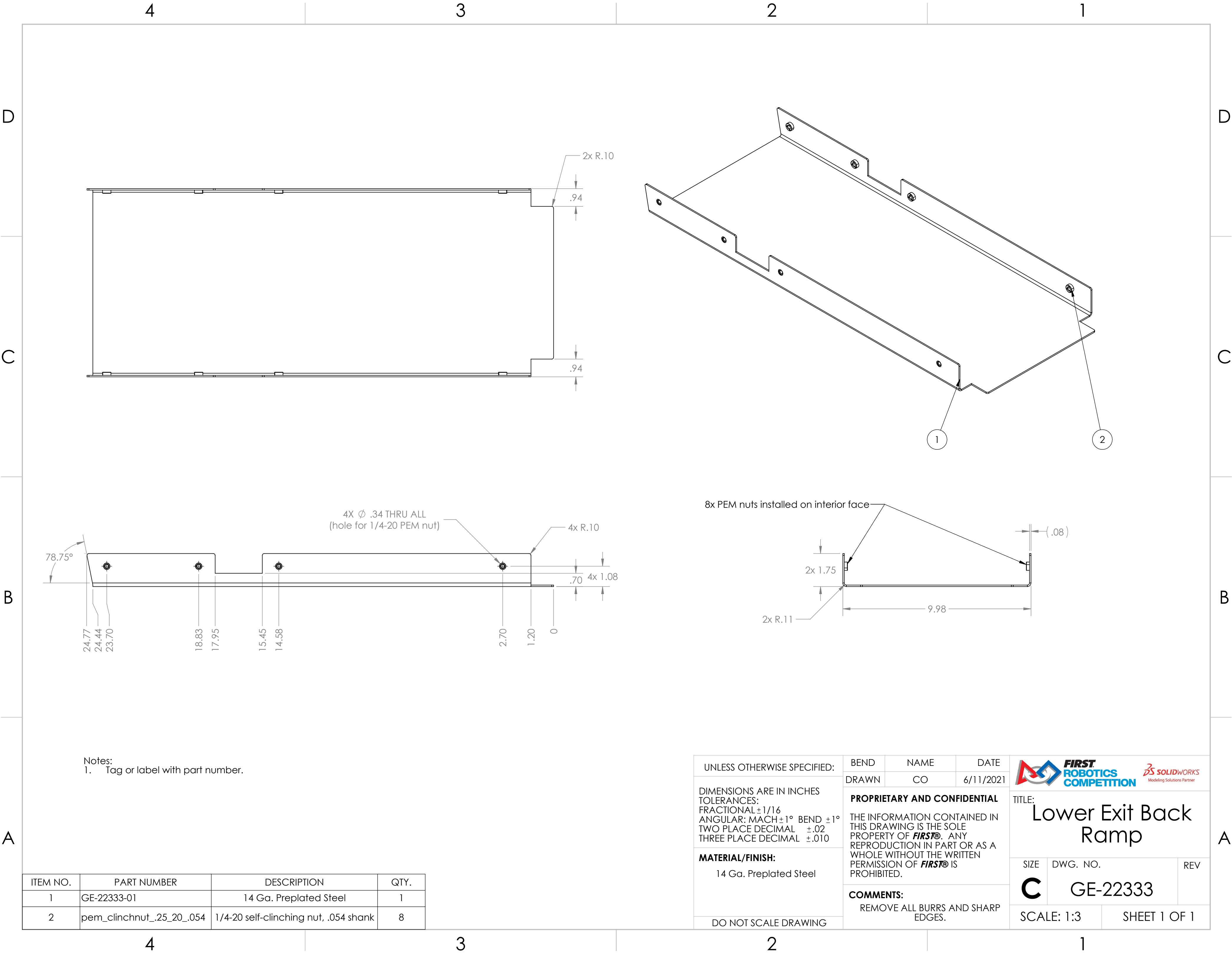
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>		
	DRAWN	CO	10/27/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Lower Exit Front Ramp with Loop		
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22331	
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1



Notes:
1. Tag or label with part number.





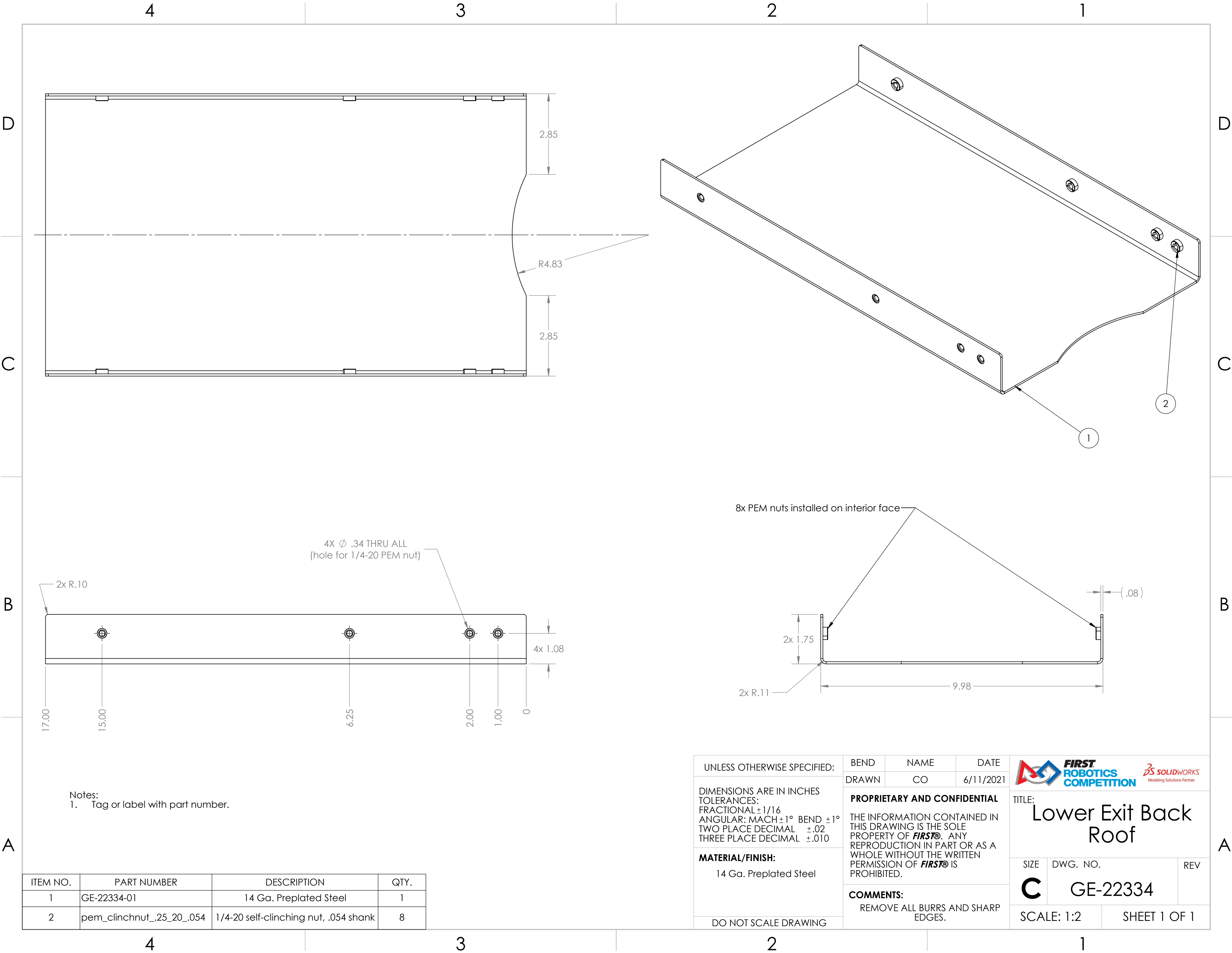
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	DRAWN	CO	6/11/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit HDPE Wall	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22332
			SCALE: 1:3		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22333-01	14 Ga. Preplated Steel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 14 Ga. Preplated Steel DO NOT SCALE DRAWING	BEND	NAME	DATE	  TITLE: Lower Exit Back Ramp			
	DRAWN	CO	6/11/2021				
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				C	GE-22333	
				SCALE: 1:3		SHEET 1 OF 1	



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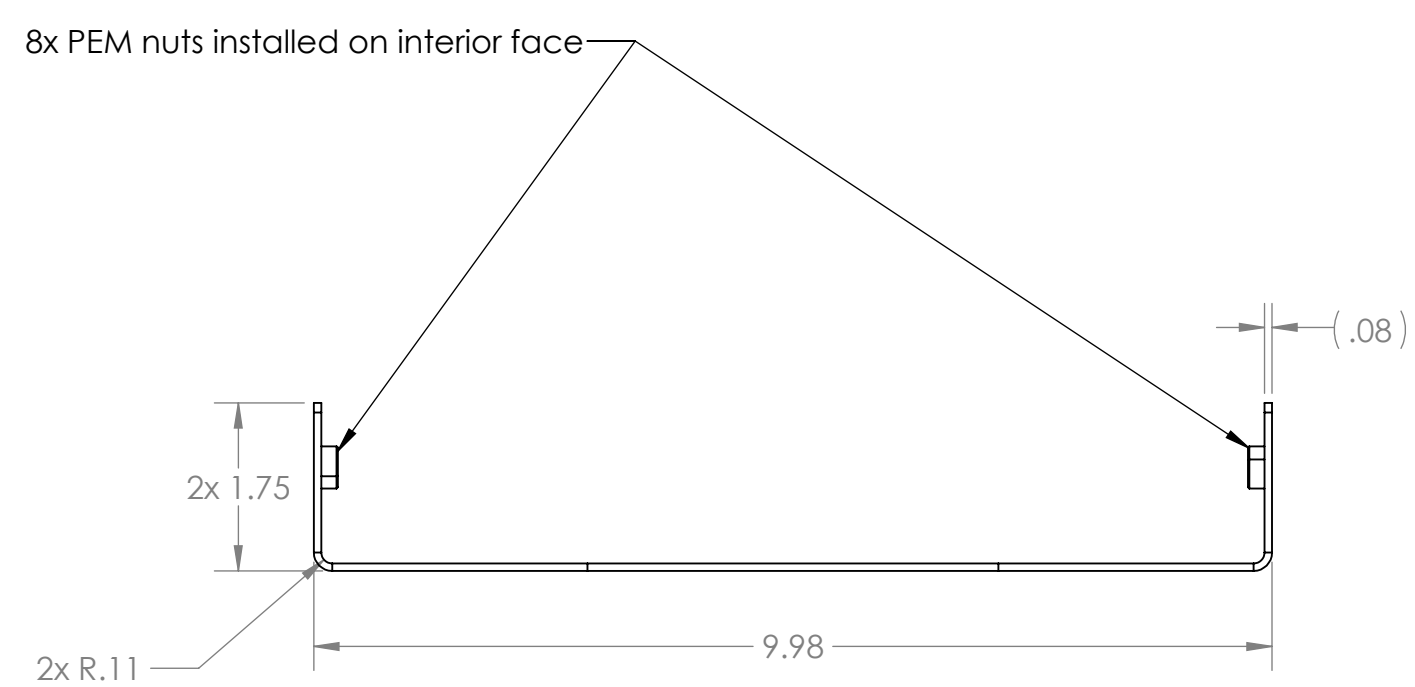
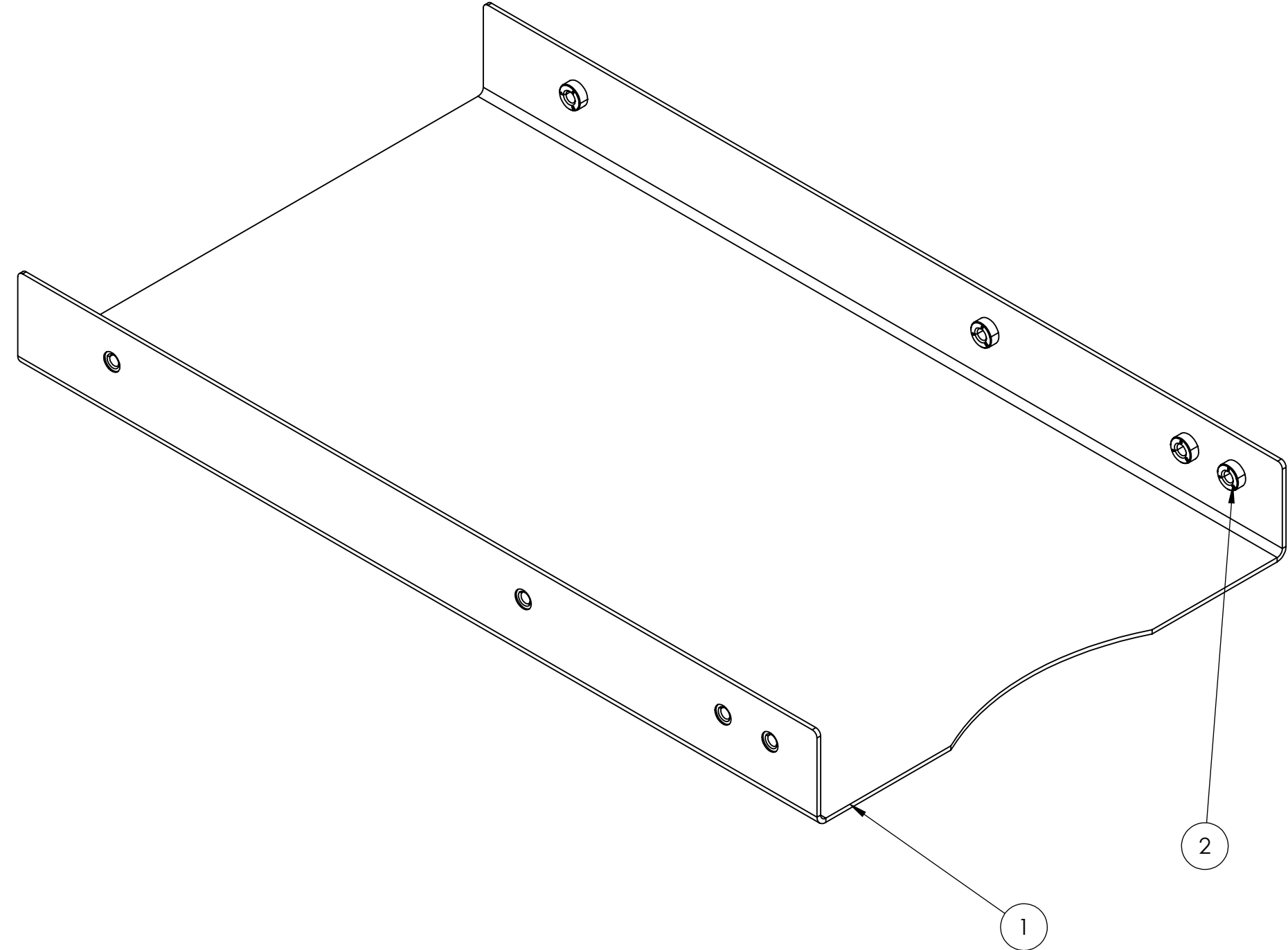
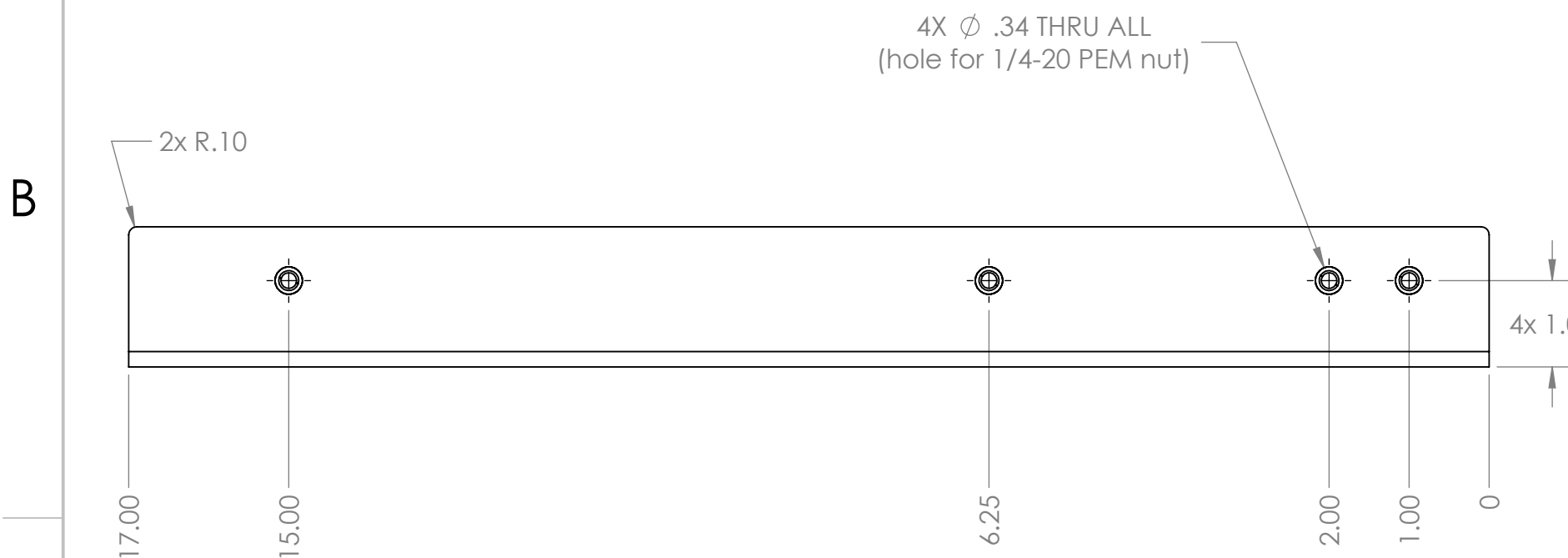
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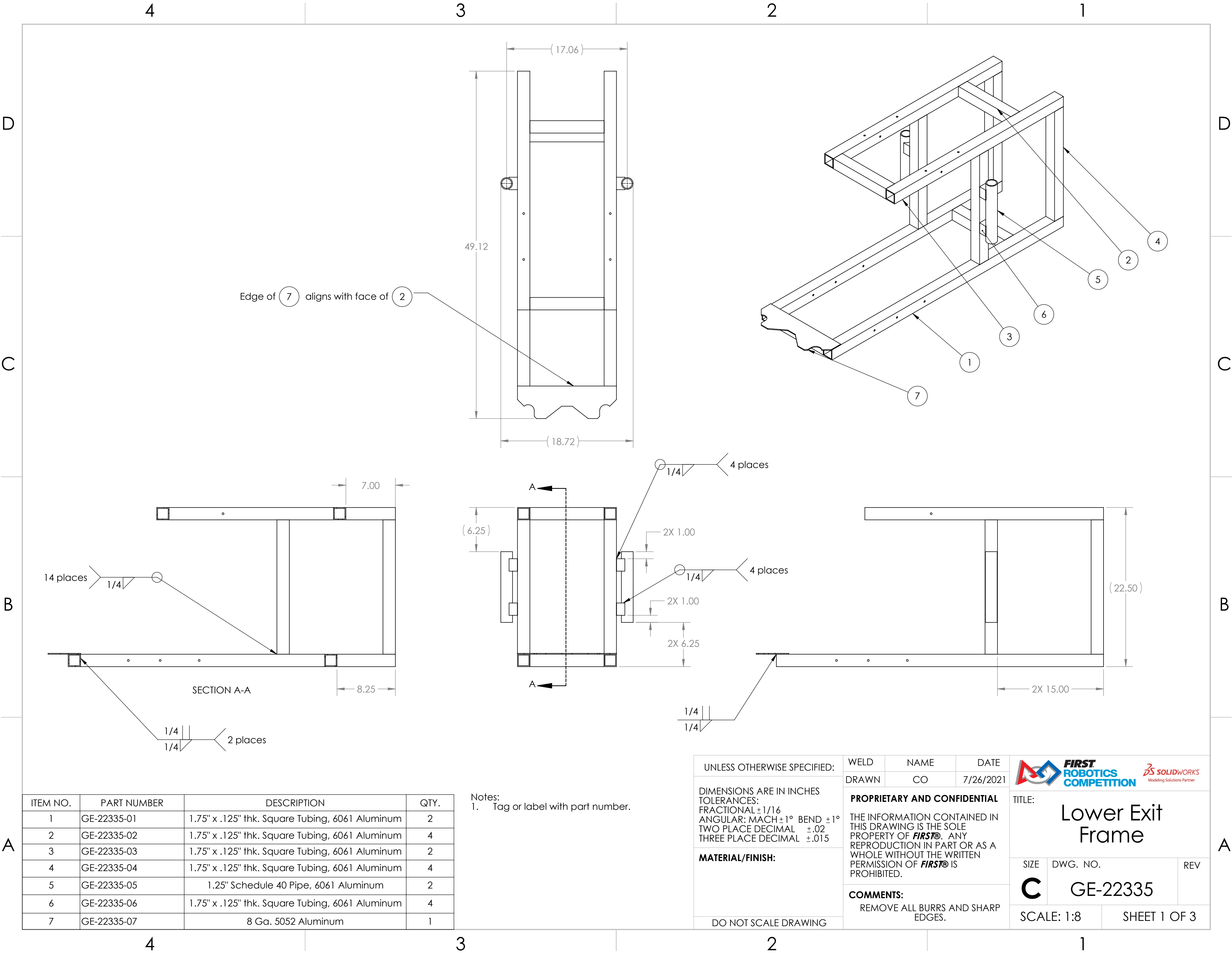
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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22334-01	14 Ga. Preplated Steel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	 		
	DRAWN	CO	6/11/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: <div>Lower Exit Back Roof</div>		
MATERIAL/FINISH: 14 Ga. Preplated Steel	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22334	
				SCALE: 1:2		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22335-01	1.75" x .125" thk. Square Tubing, 6061 Aluminum	2
2	GE-22335-02	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
3	GE-22335-03	1.75" x .125" thk. Square Tubing, 6061 Aluminum	2
4	GE-22335-04	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
5	GE-22335-05	1.25" Schedule 40 Pipe, 6061 Aluminum	2
6	GE-22335-06	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
7	GE-22335-07	8 Ga. 5052 Aluminum	1

Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

WELD

DRAWN

NAME

CO

DATE



7/26/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Lower Exit Frame

SIZE

DWG. NO.

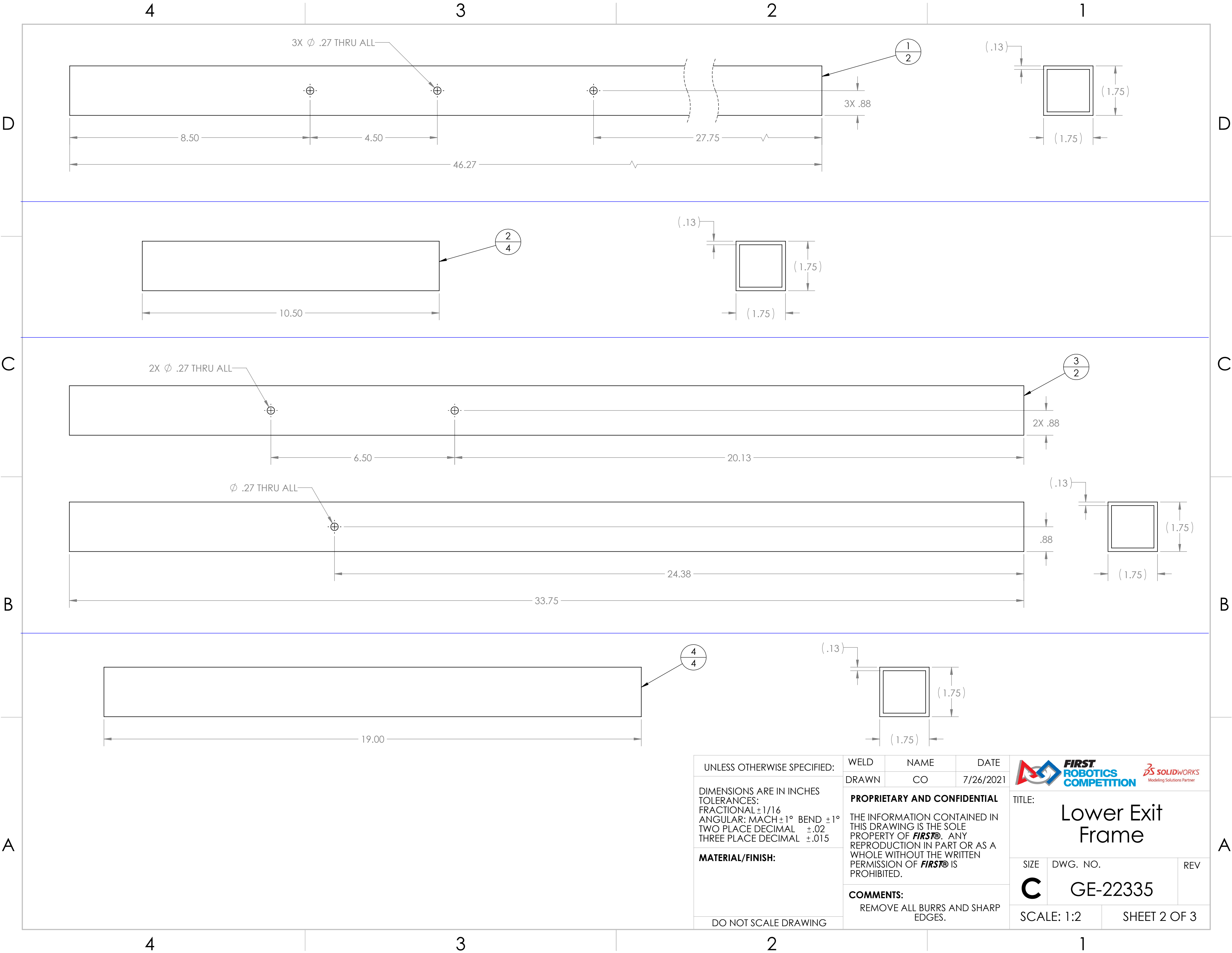
REV



C

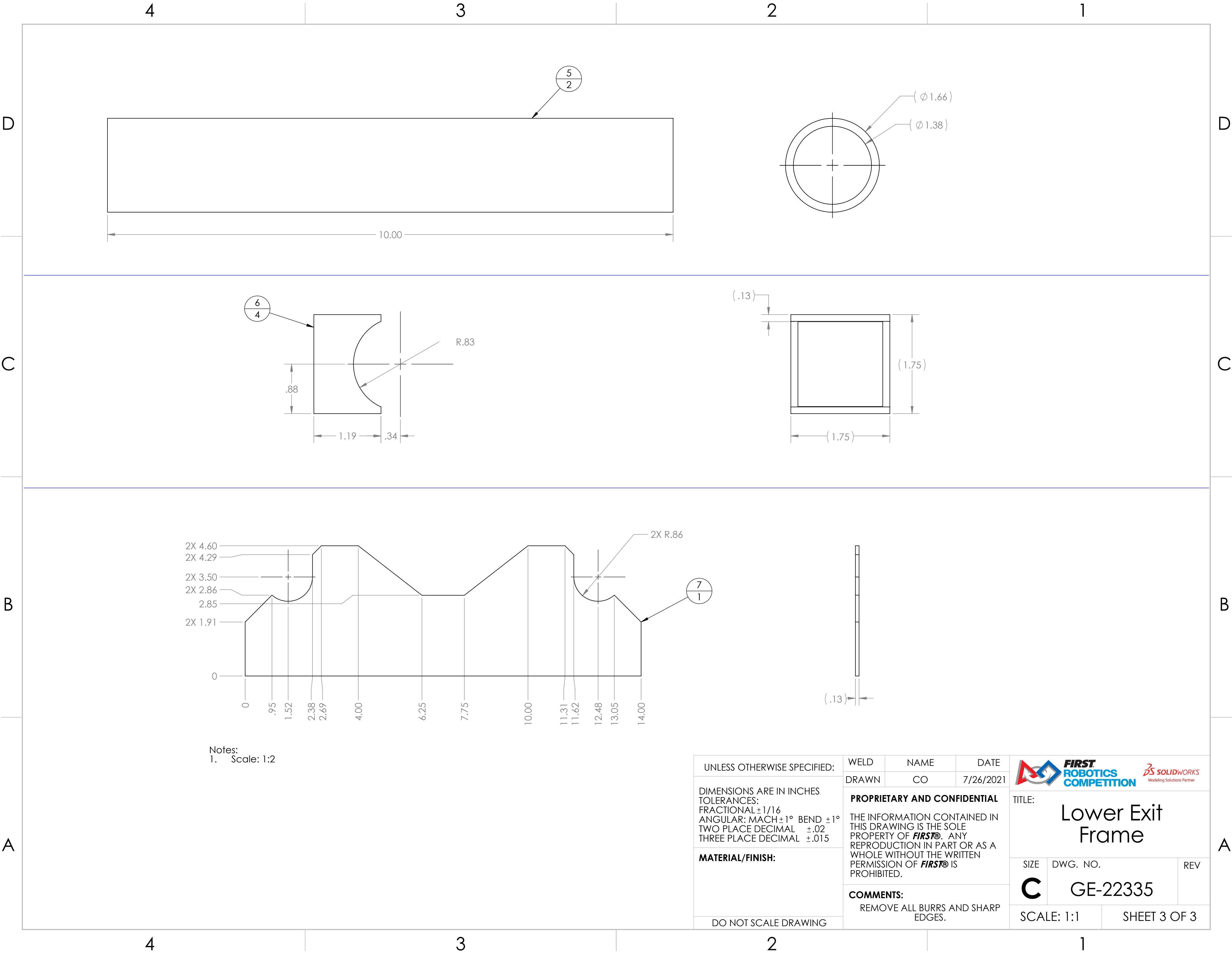
GE-22335

SCALE: 1:8



SHEET 1 OF 3

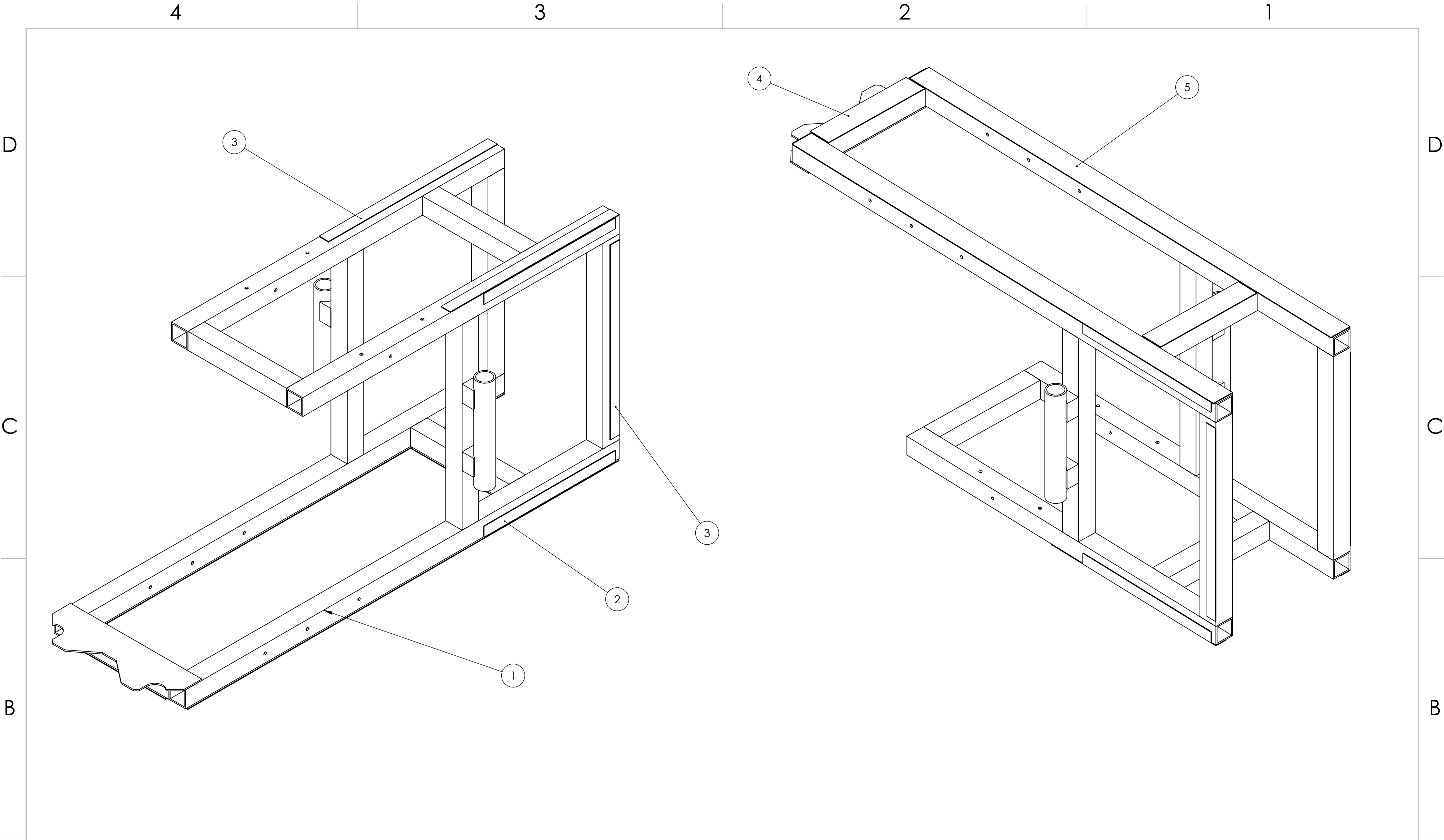


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$ MATERIAL/FINISH: DO NOT SCALE DRAWING	WELD	NAME	DATE	<div></div> <div>TITLE: Lower Exit Frame</div>		
	DRAWN	CO	7/26/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22335	
SCALE: 1:2		SHEET 2 OF 3				





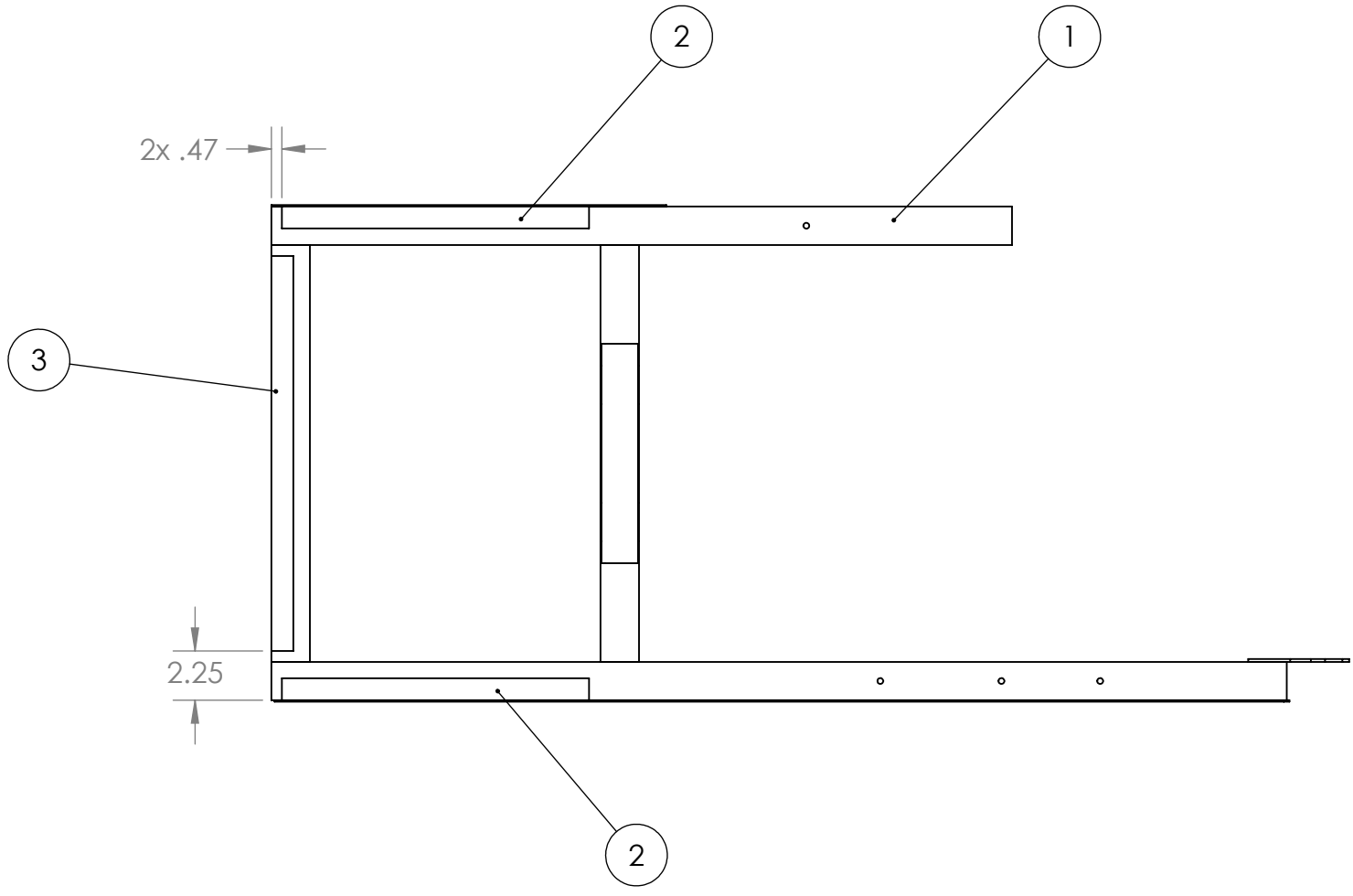
Notes:
1. Scale: 1:2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015 MATERIAL/FINISH: DO NOT SCALE DRAWING	WELD	NAME	DATE	<div></div> <div>TITLE: <h1>Lower Exit Frame</h1></div>		
	DRAWN	CO	7/26/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22335	REV
				SCALE: 1:1		SHEET 3 OF 3

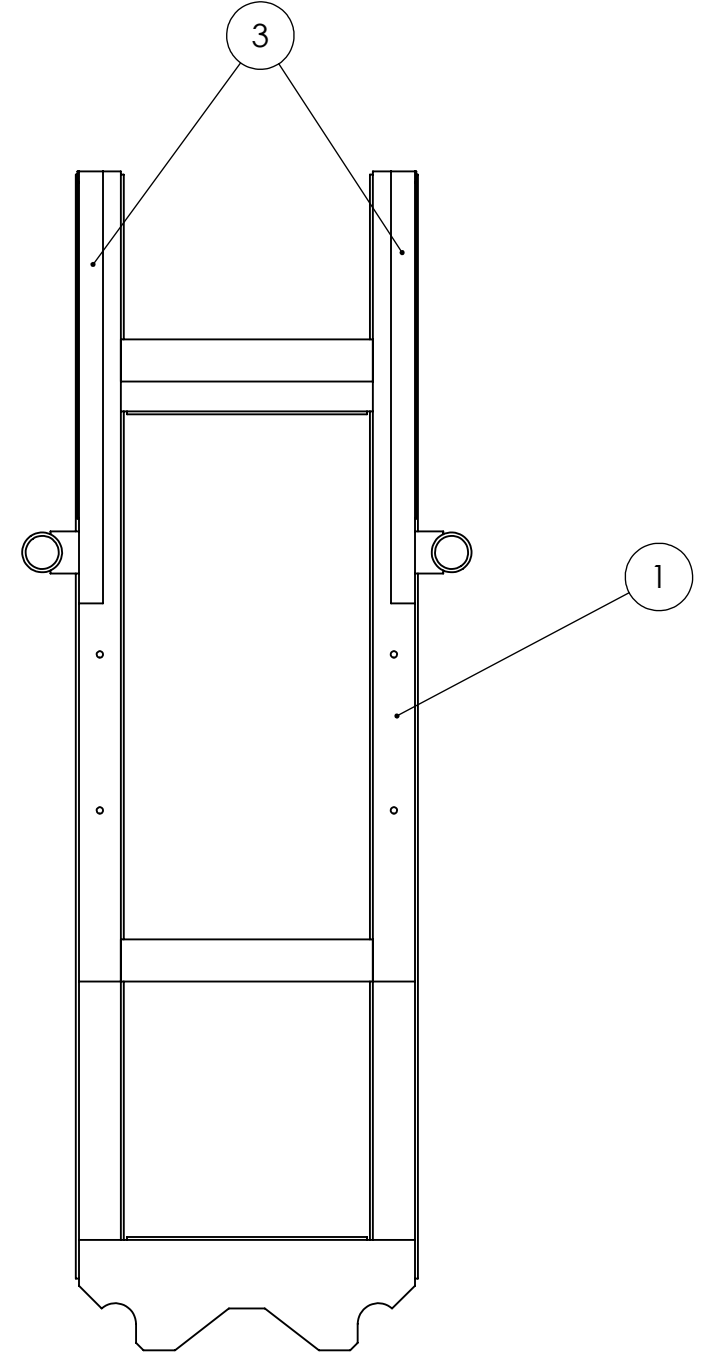


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22335	Lower Exit Frame	1
2	Hook_1_14	1" x 14" Hook, Adhesive Backed	4
3	Hook_1_18	1" x 18" Hook, Adhesive Backed	4
4	Hook_2_10	2" x 10" Hook, Adhesive Backed	2
5	Hook_2_46	2" X 46" Hook, Adhesion Backed	2

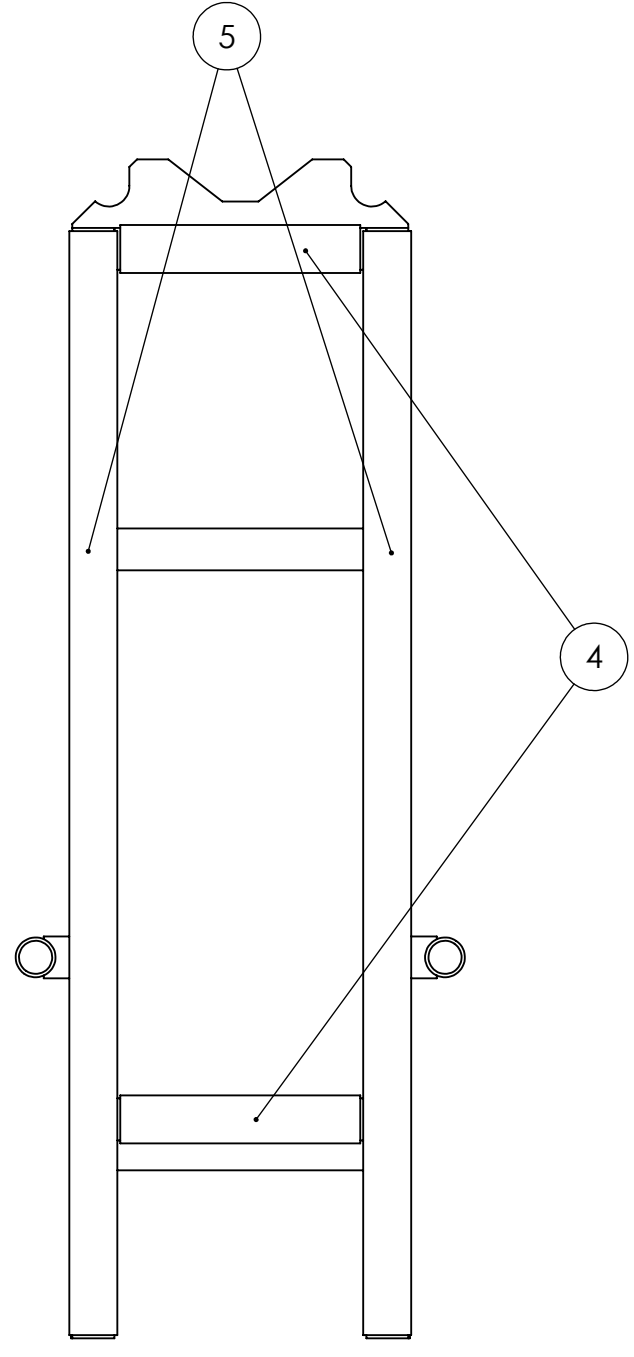
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	DRAWN	CO	10/27/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit Frame with Hook		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22336	REV
				SCALE: 1:5		SHEET 1 OF 2





- Notes:
1. Make sure surface of 1 is clean prior to hook application.
 2. Attach 2 and 3 in locations shown.
 3. Repeat process for opposite side of weldment.

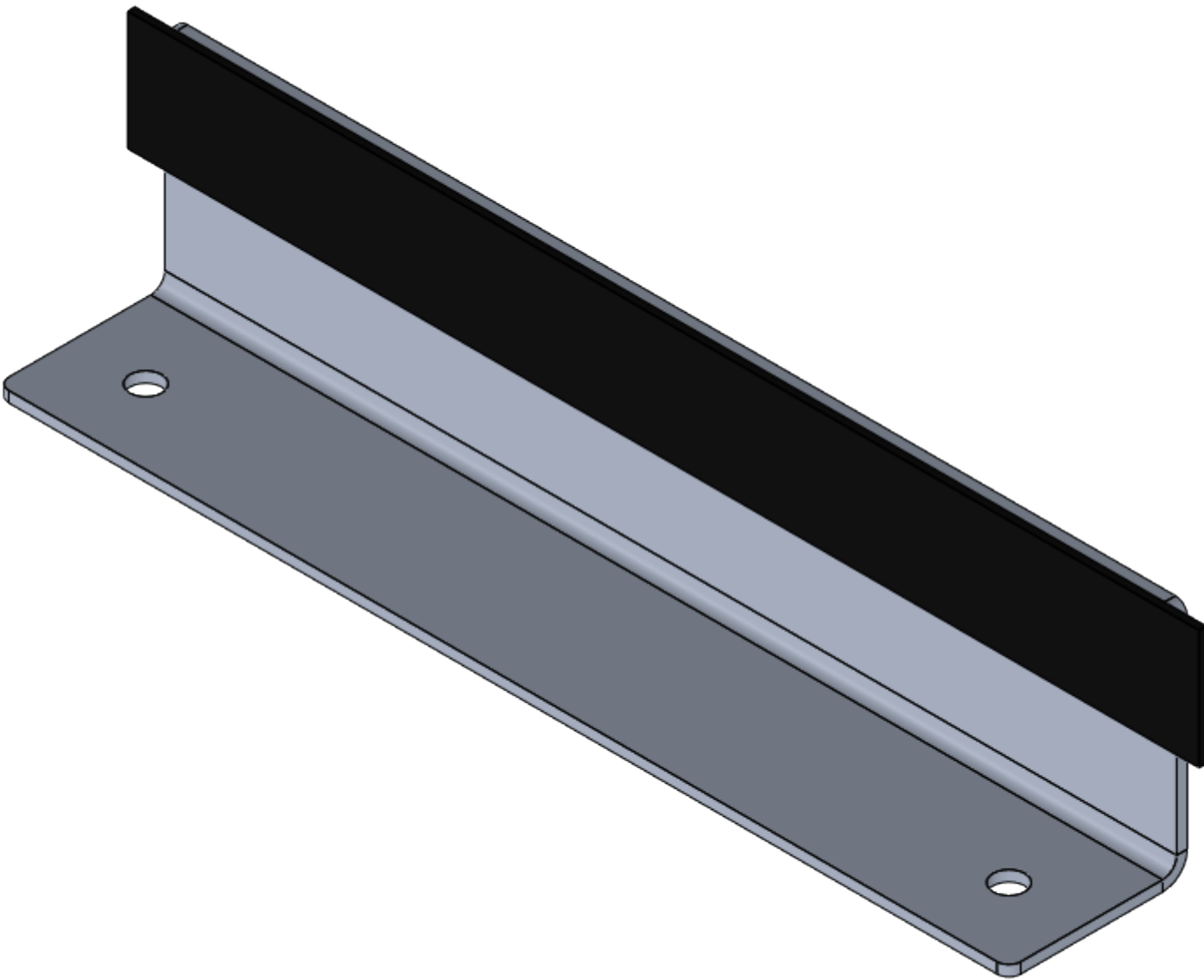
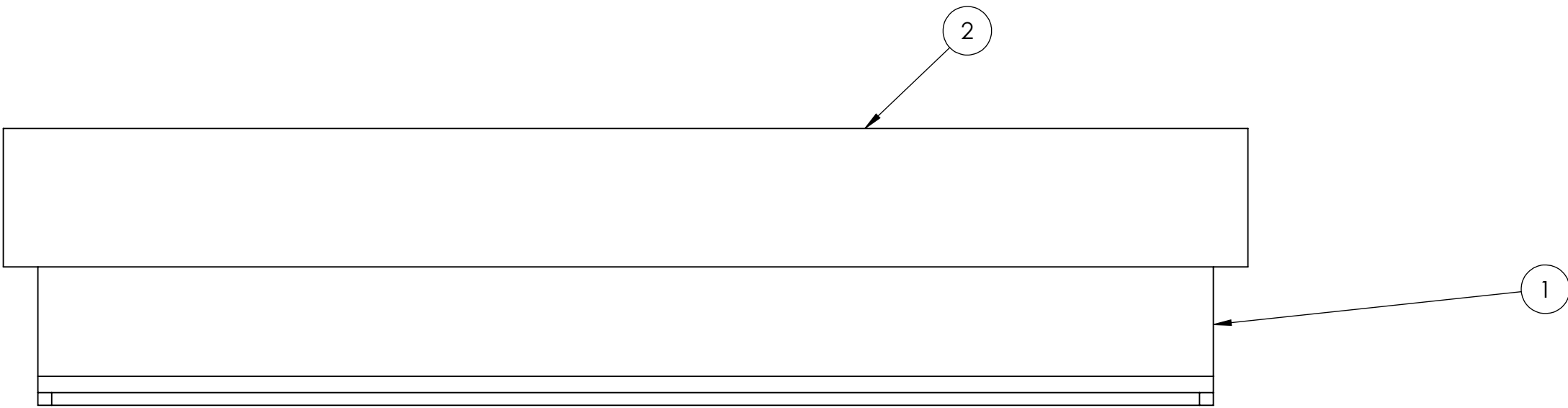


- Notes:
1. Make sure surface of 1 is clean prior to hook application.
 2. Attach 3 in locations shown.





- Notes:
1. Make sure surface of 1 is clean prior to hook application.
 2. Attach 4 and 5 in locations shown.
 3. Repeat process for opposite side of weldment.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: Lower Exit Frame with Hook</div></div>		
	DRAWN	CO	10/27/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE DWG. NO. REV		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			C GE-22336		
	REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING				SCALE: 1:8		SHEET 2 OF 2



- Notes:
- 1. Make sure surface of ① is clean prior to hook application.
 - 2. Attach ② to ① in location shown. ② should be centered along the edge of ① .

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22325	Lower Exit Ramp Angle	1
2	Hook_1_9	1" x 9" Hook, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	12/14/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit Ramp Angle with Hook	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22337
			SCALE: 1:1		SHEET 1 OF 1

D

C

B

A

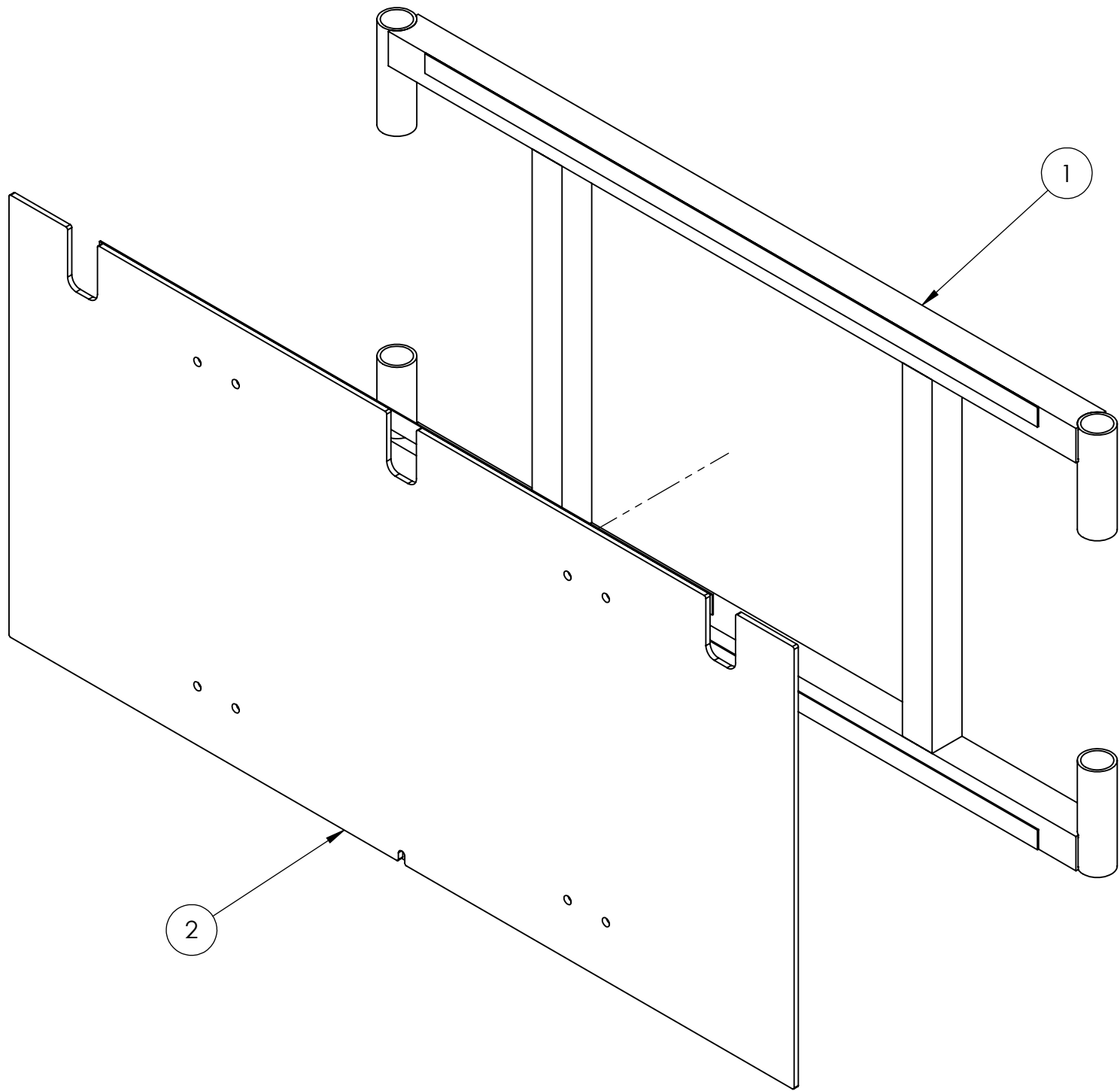
4321

D

C

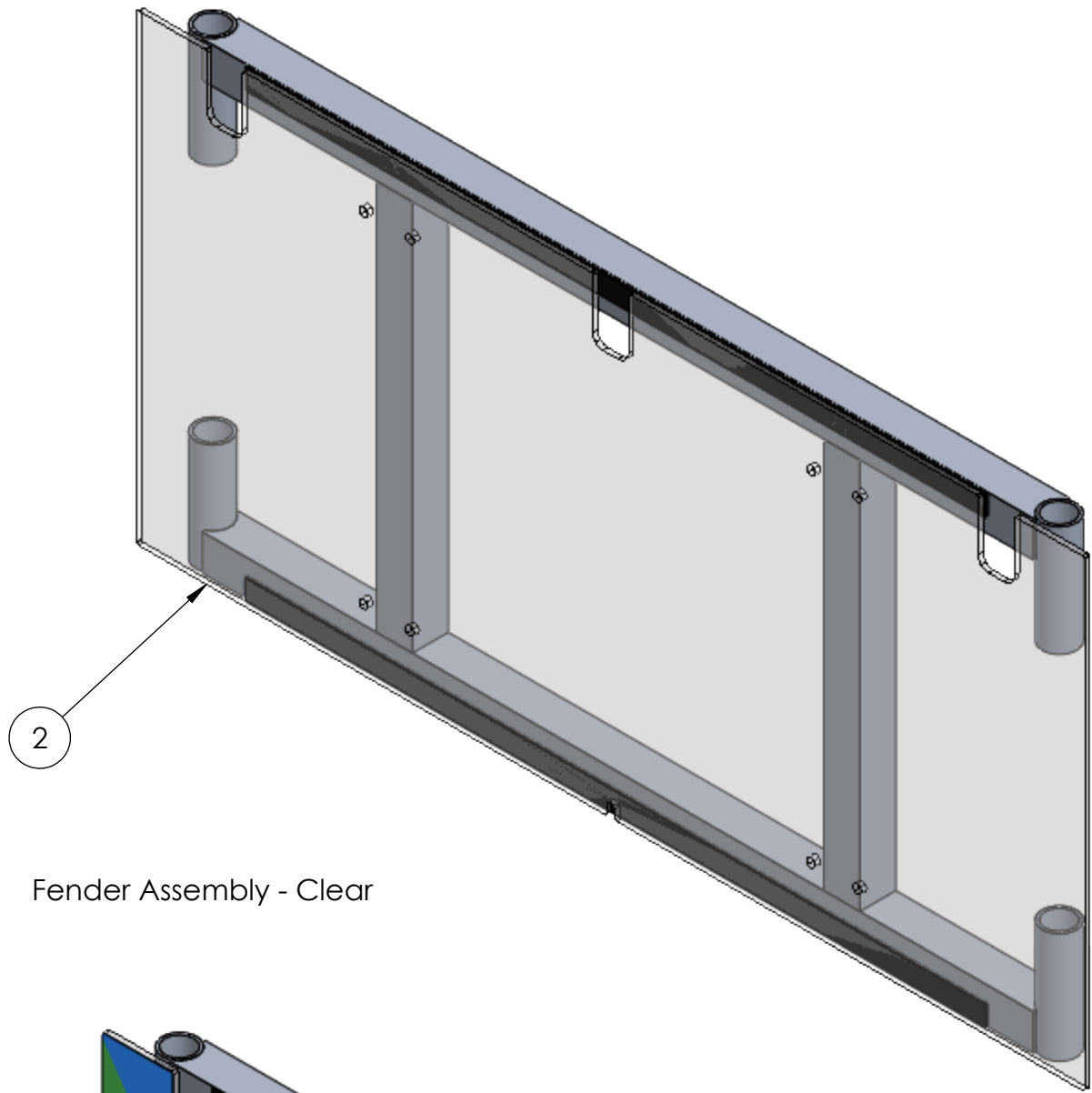
B

A

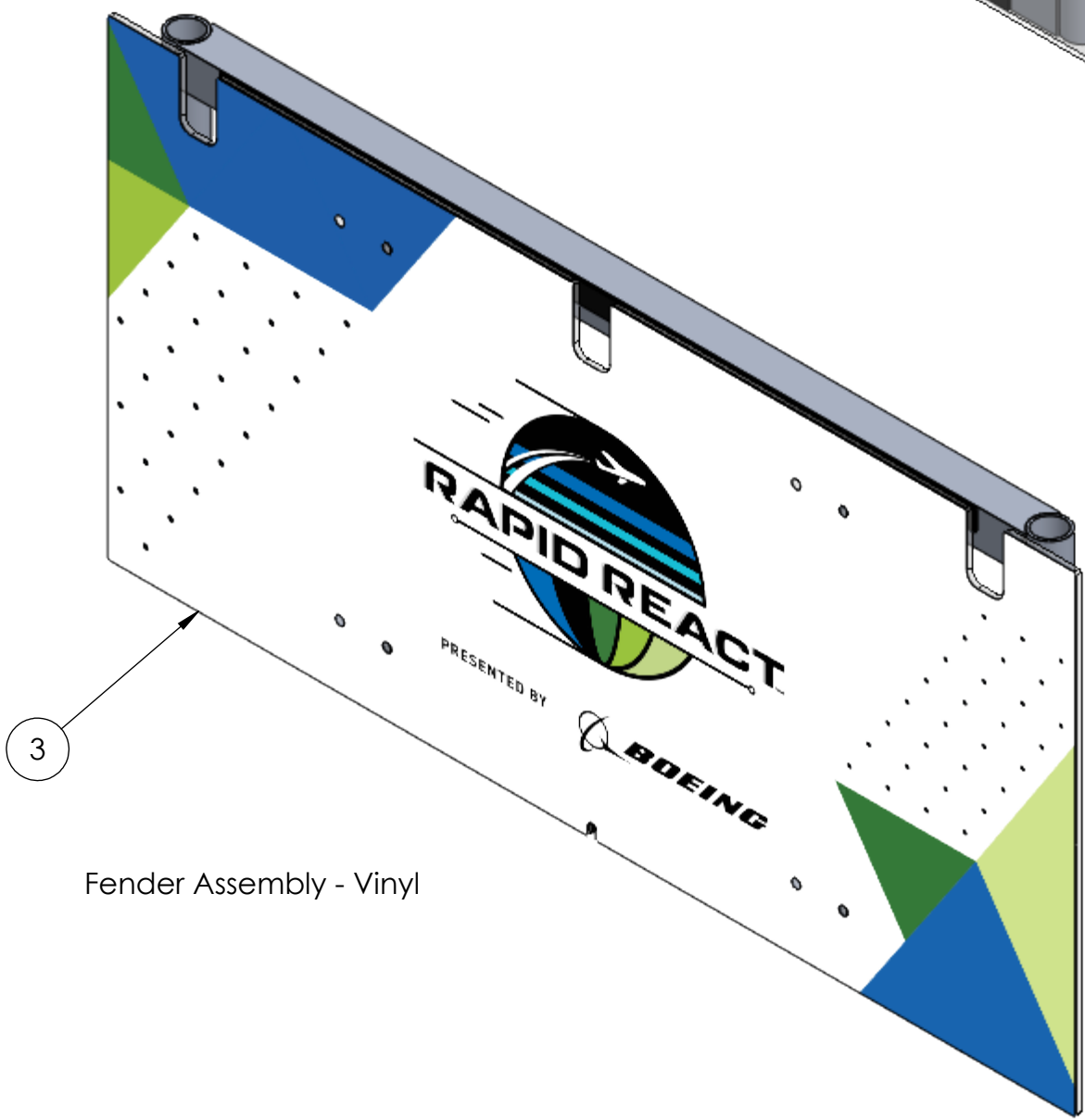


- Notes:
- 1. Attach (2) or (3) to (1) using hook and loop.
 - 2. Assembly exists in Vinyl and clear configurations.



ITEM NO.	PART NUMBER	DESCRIPTION	Fender Assembly - Clear QTY.	Fender Assembly - Vinyl QTY.
1	GE-22343	Fender Frame with Hook	1	1
2	GE-22345	Fender Front Polycarbonate with Loop	1	-
3	GE-22349	Fender Vinyl Polycarbonate with Loop	-	1



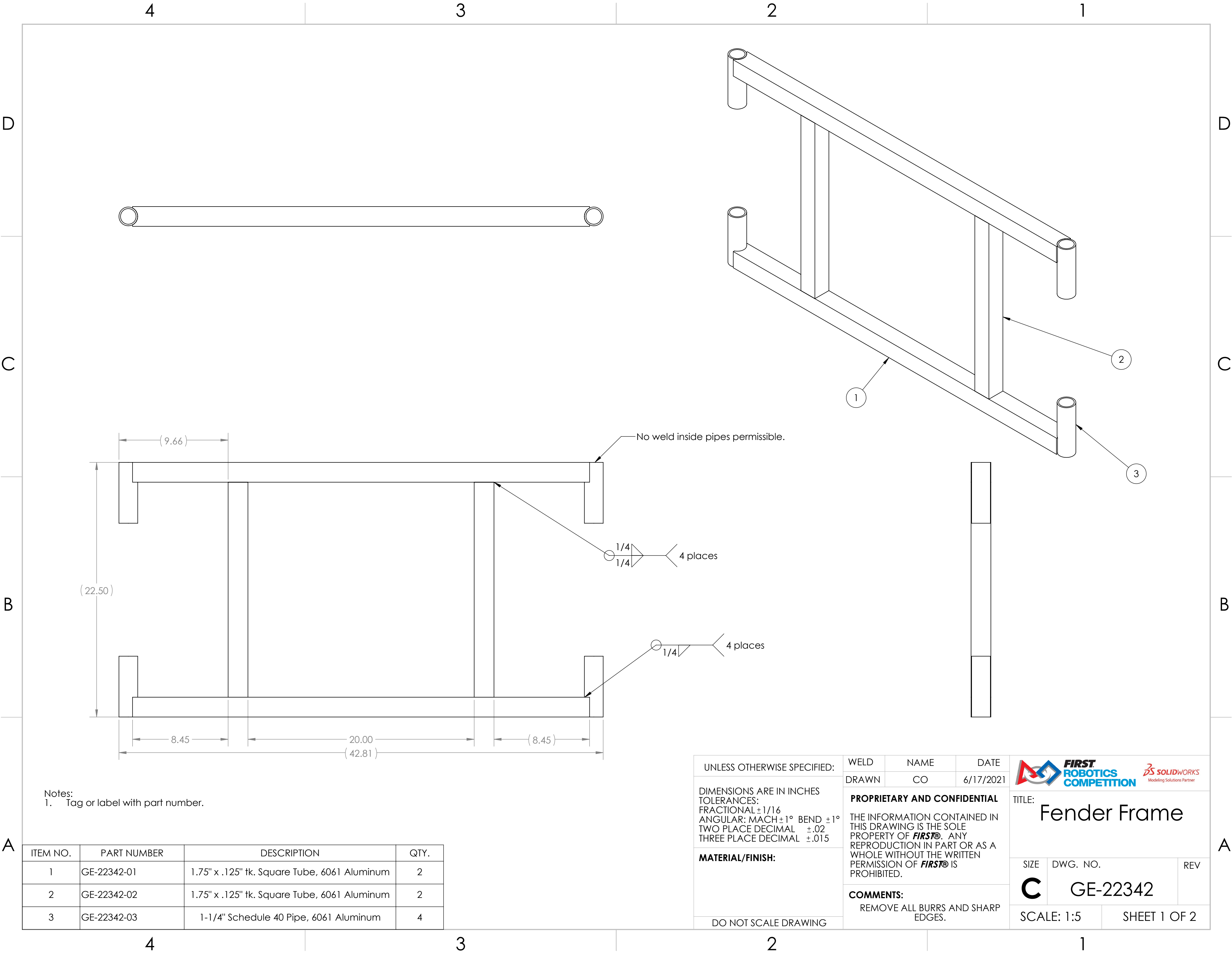
Fender Assembly - Clear



Fender Assembly - Vinyl

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	  TITLE: Fender Assembly		
	DRAWN	CO	12/14/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22341	
			SCALE: 1:6	SHEET 1 OF 1		



4321



Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22342-01	1.75" x .125" tk. Square Tube, 6061 Aluminum	2
2	GE-22342-02	1.75" x .125" tk. Square Tube, 6061 Aluminum	2
3	GE-22342-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$ MATERIAL/FINISH: DO NOT SCALE DRAWING	WELD	NAME	DATE
	DRAWN	CO	6/17/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		



TITLE:
Fender Frame

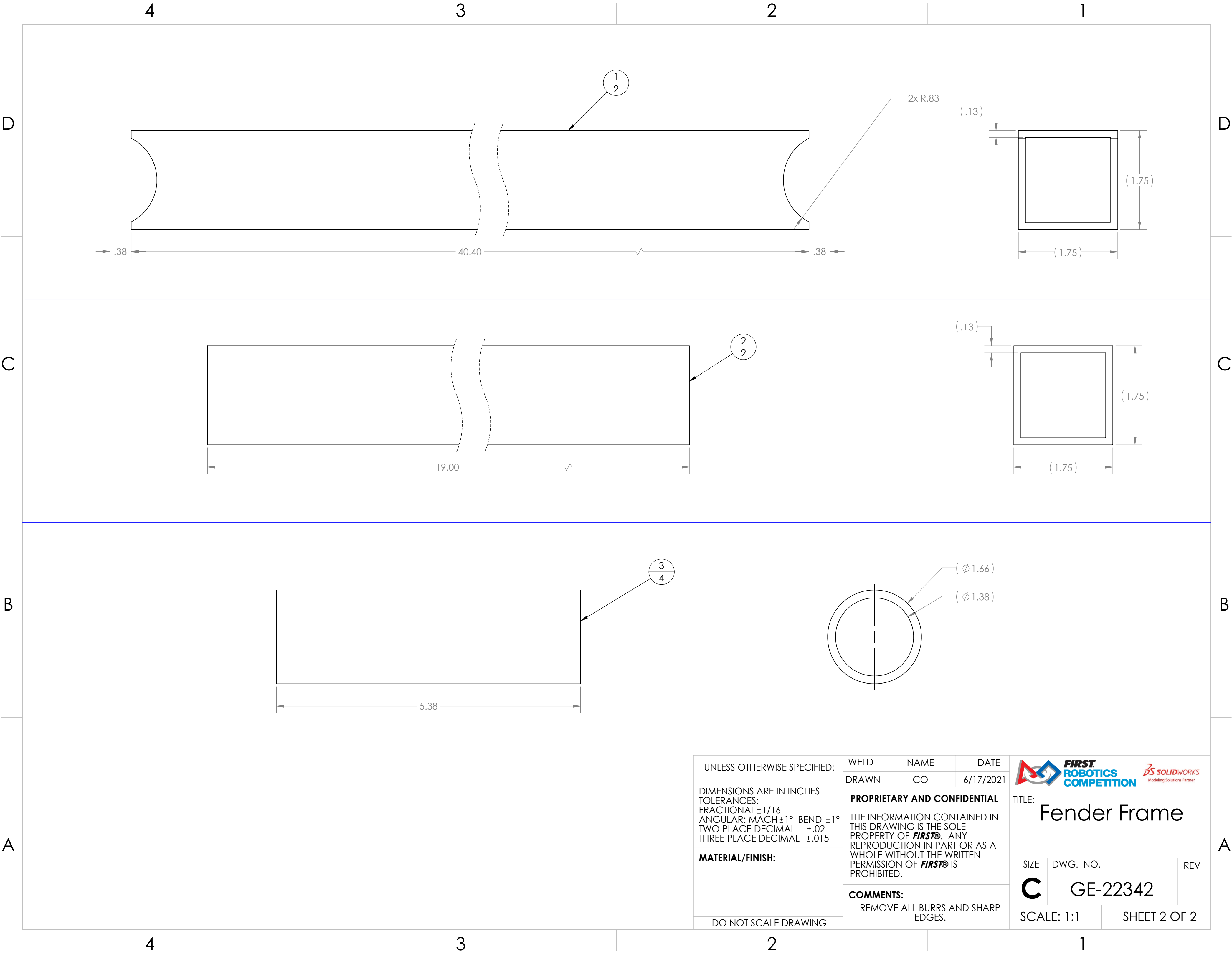
SIZE
C

DWG. NO.
GE-22342

REV

SCALE: 1:5

SHEET 1 OF 2



D

D

C

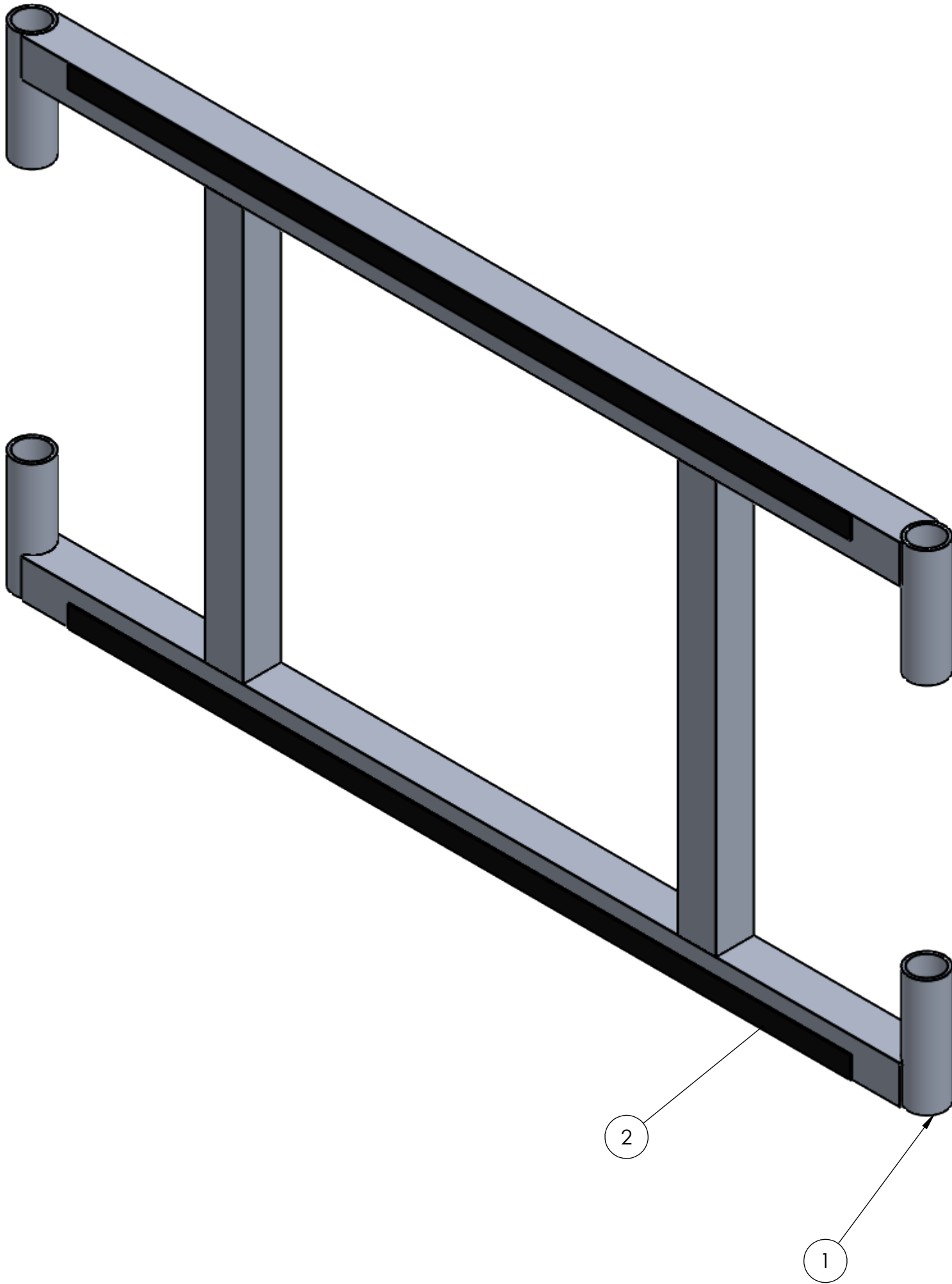
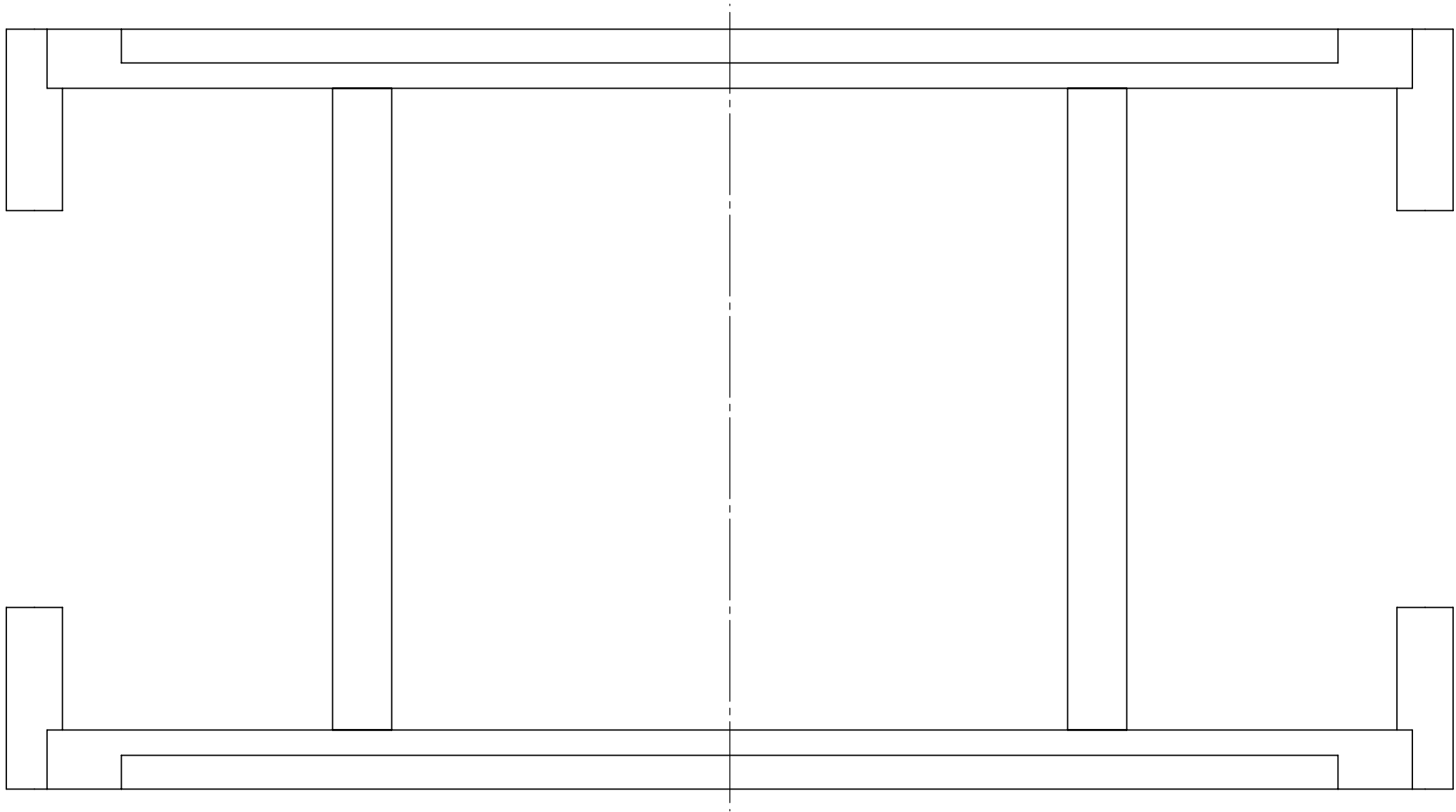
C

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A

A



- Notes:
1. Make sure surface of (1) is clean prior to hook application.
 2. Attach (2) to (1) in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22342	Fender Frame	1
2	Hook_1_36	1" x 36" Hook, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 		
	DRAWN	CO	11/2/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Fender Frame with Hook		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22343	REV
				SCALE: 1:4		SHEET 1 OF 1

D

C

B

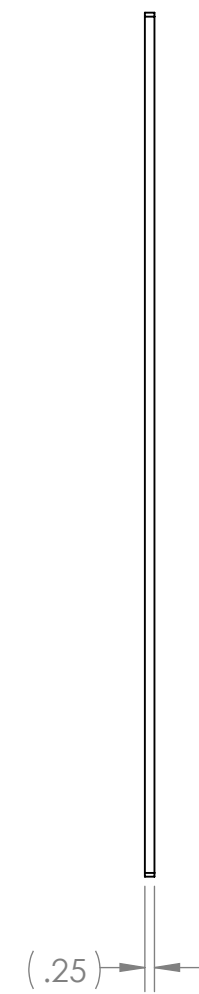
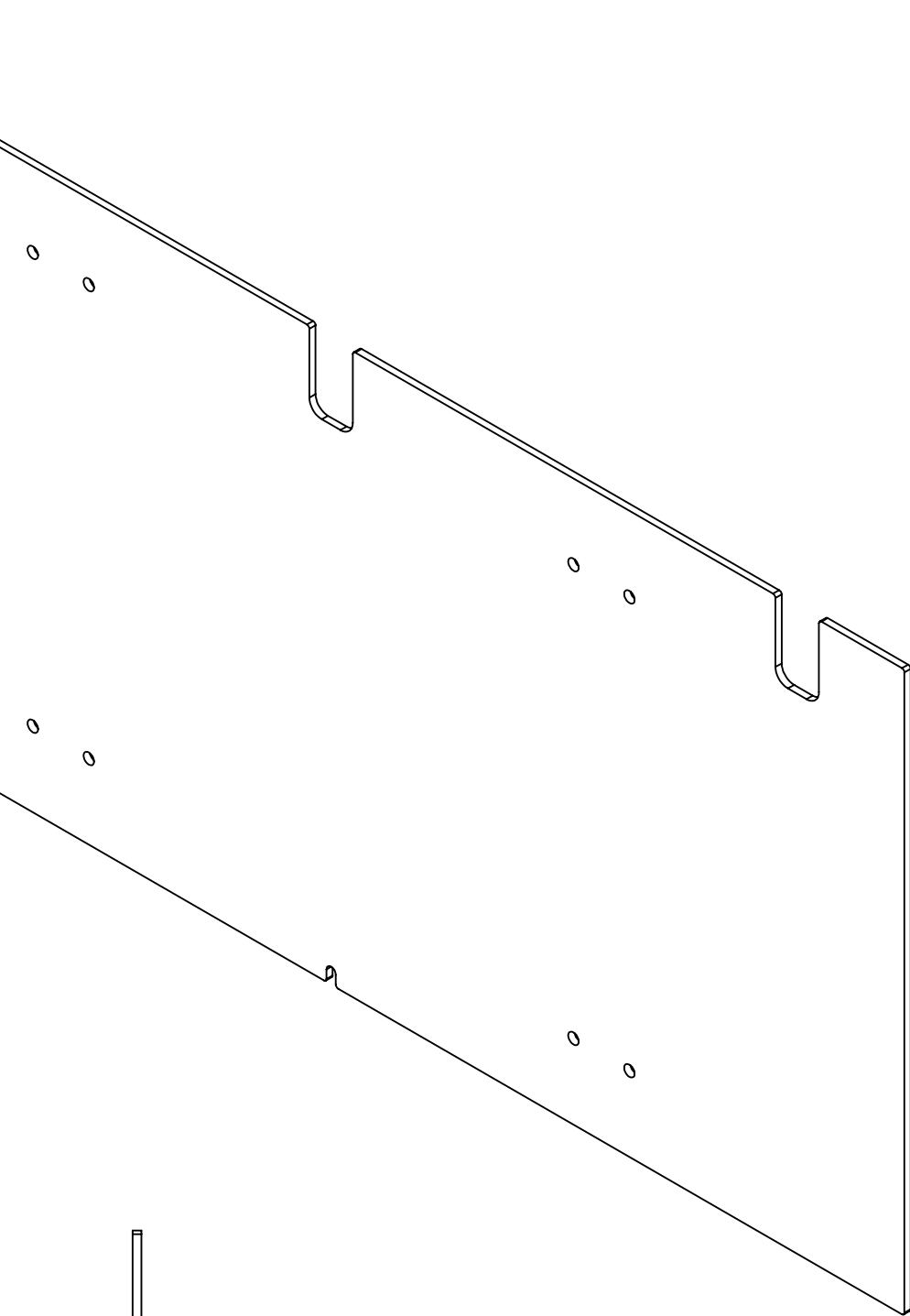
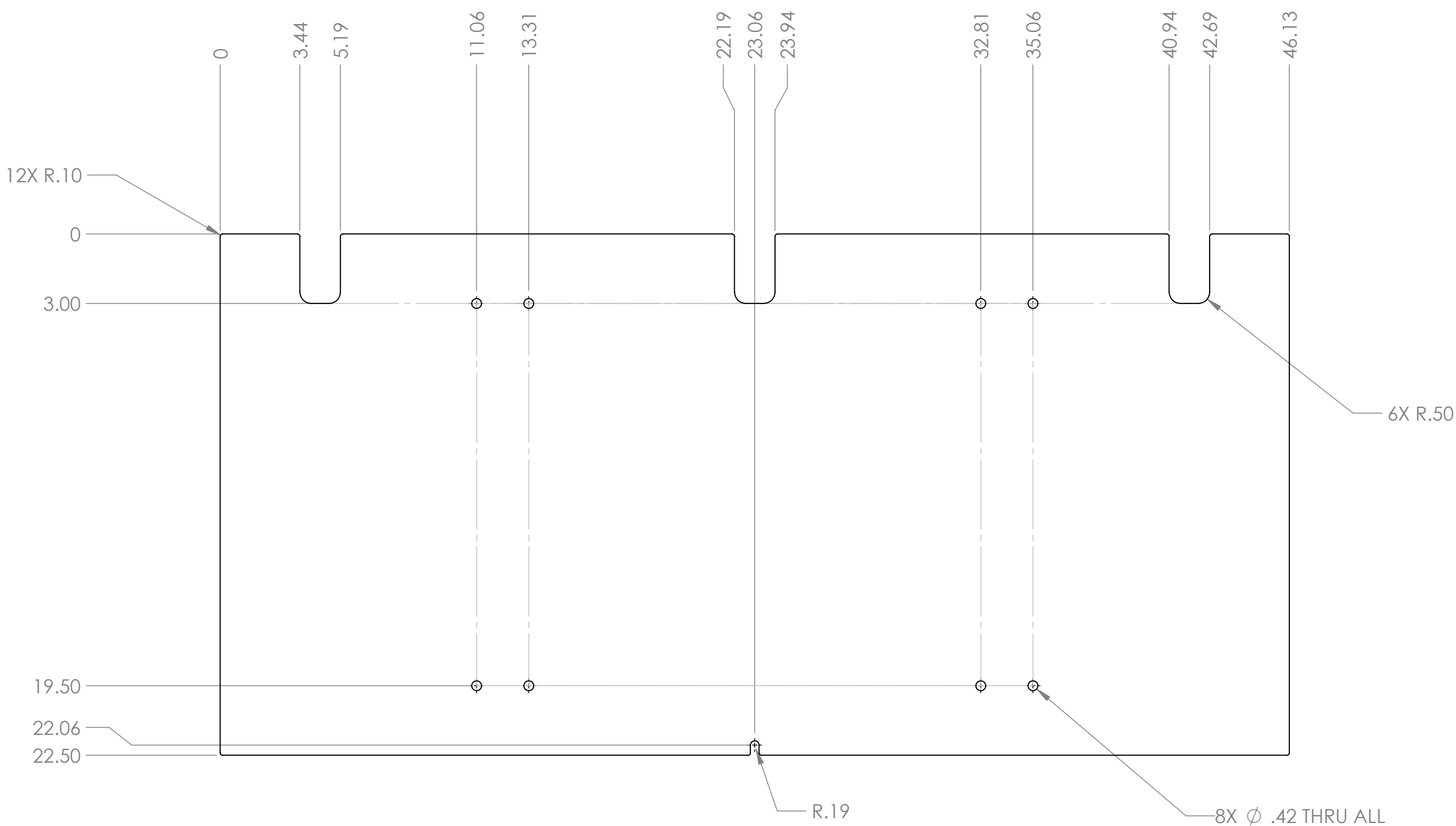
A

D




C

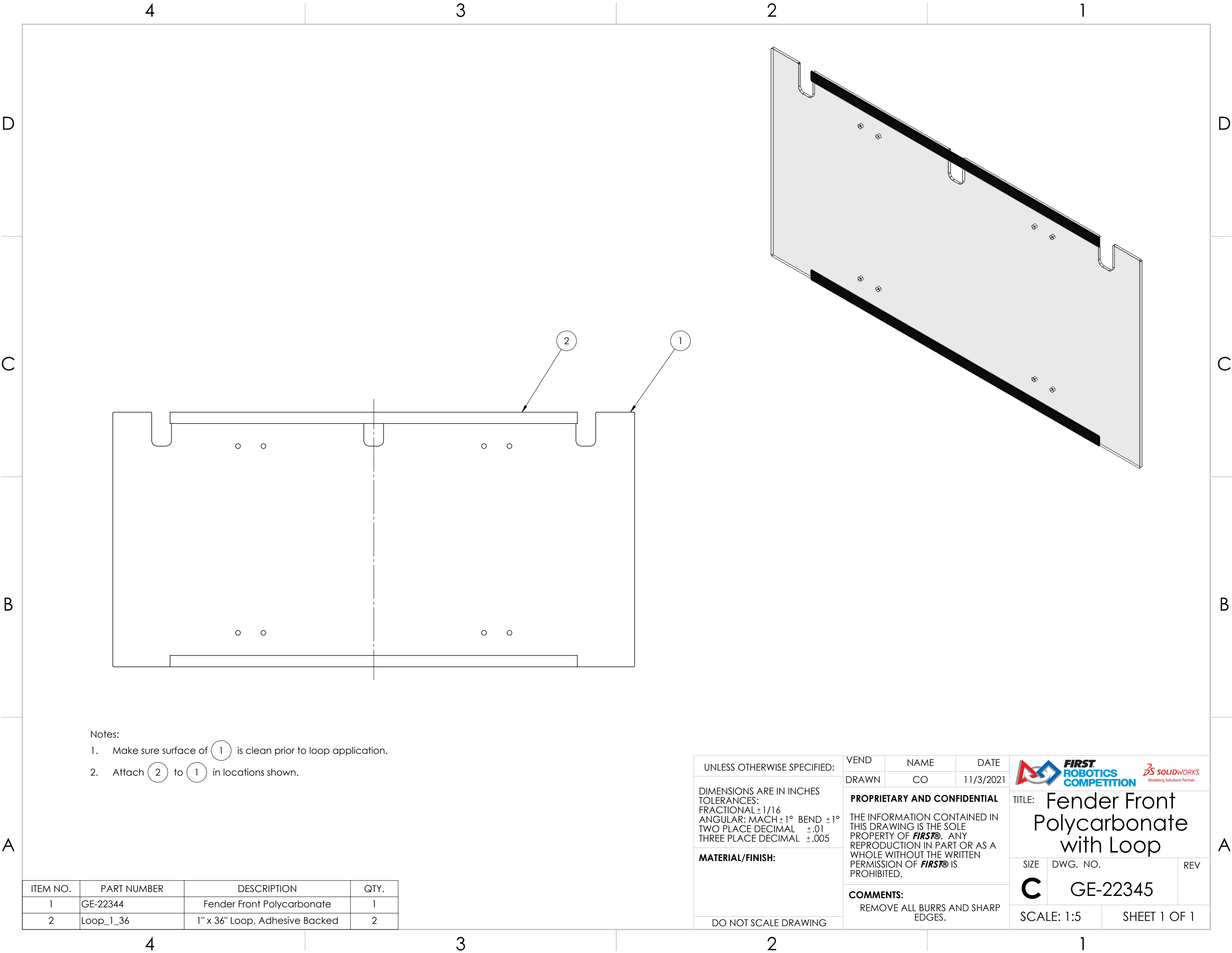
B

A



Notes:
1. Tag or label with part number
2. Vinyl to be applied to face



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear DO NOT SCALE DRAWING	VEND	NAME	DATE	  	
	DRAWN	KAMC	6/11/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Fender Front Polycarbonate	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
			C	GE-22344	
			SCALE: 1:5		SHEET 1 OF 1

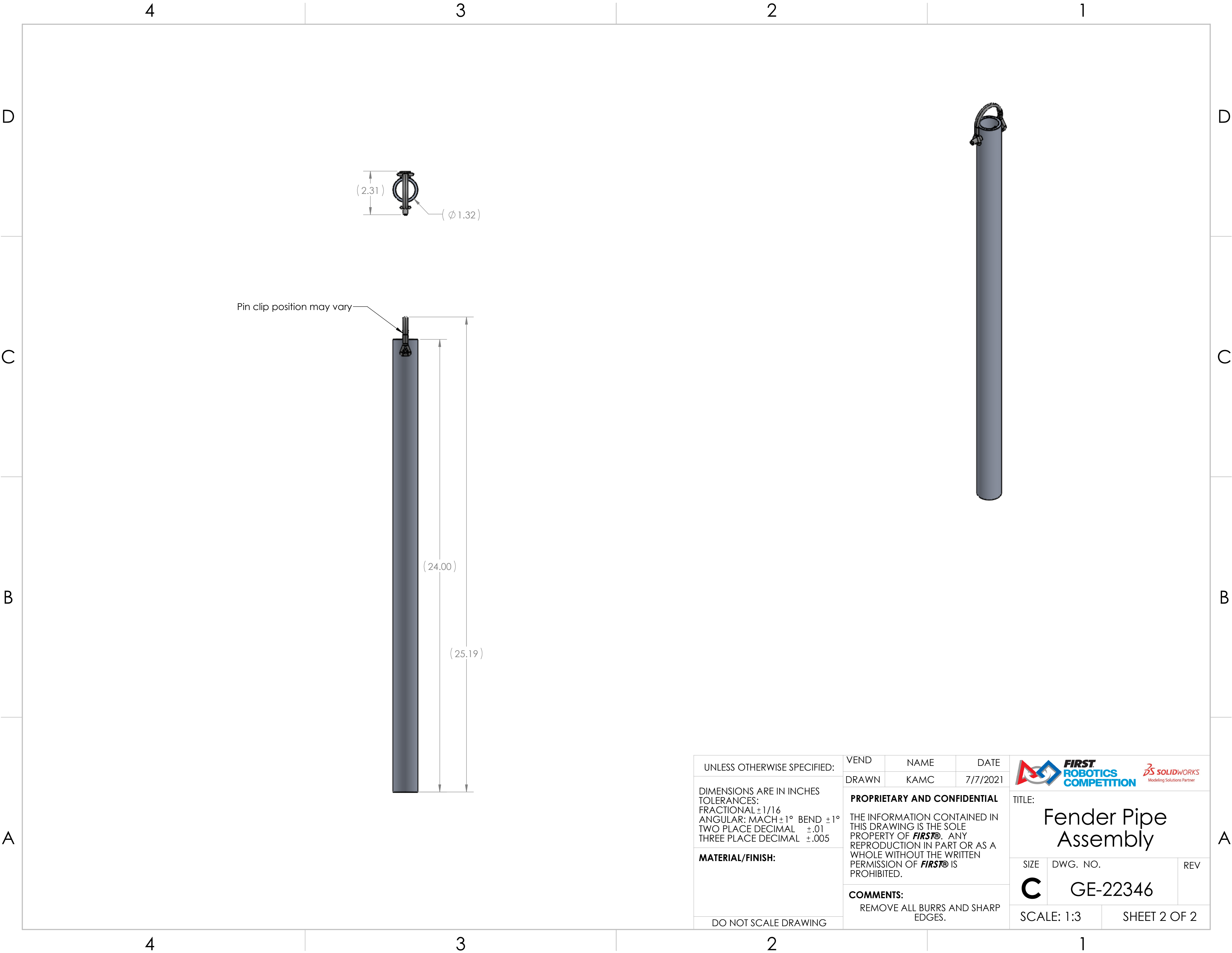




Notes:

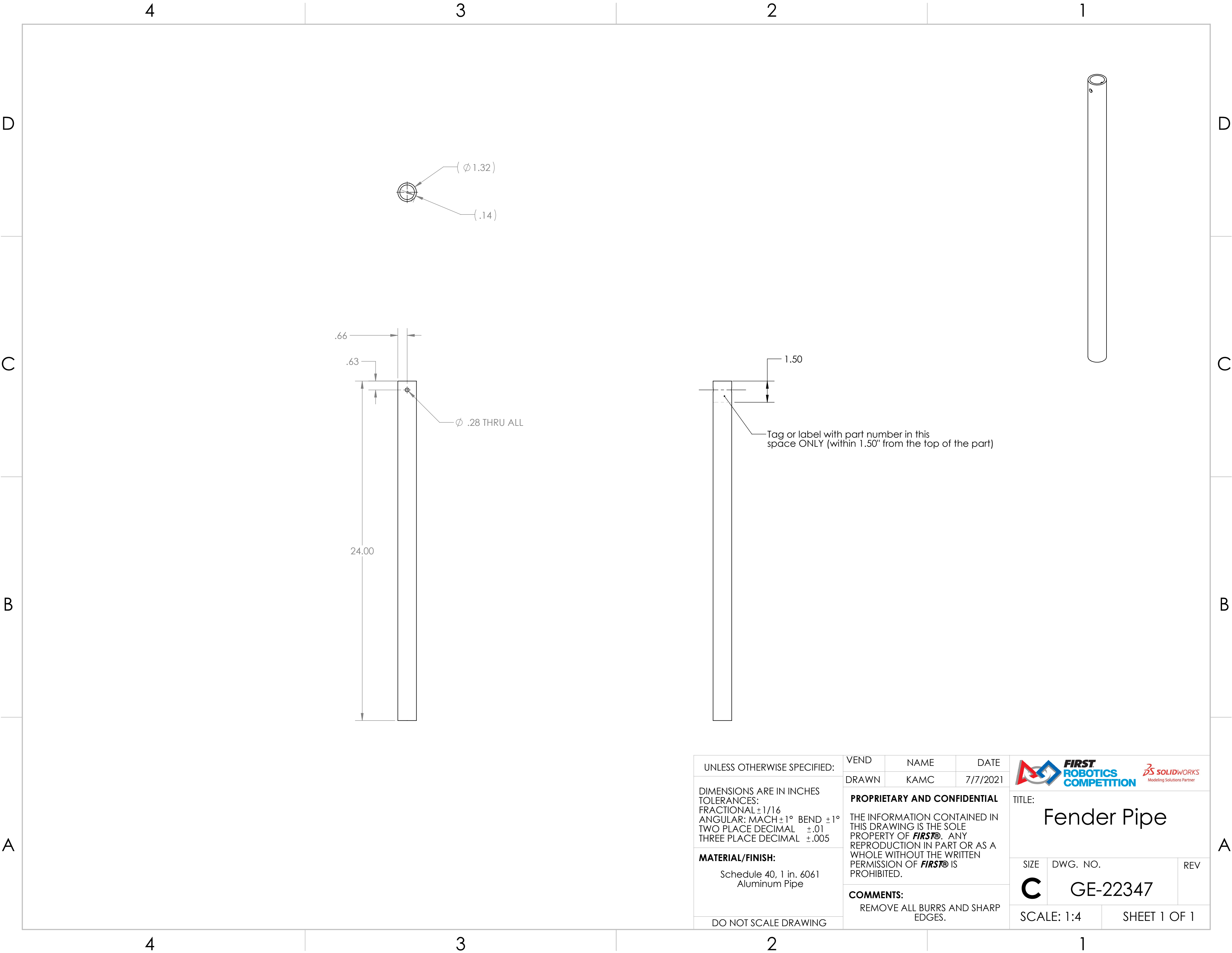
1. Make sure surface of ① is clean prior to loop application.
2. Attach ② to ① in locations shown.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22344	Fender Front Polycarbonate	1
2	Loop_1_36	1" x 36" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	CO	11/3/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
<div><div></div><div>TITLE: Fender Front Polycarbonate with Loop</div></div>			
SIZE		DWG. NO.	REV
C		GE-22345	
SCALE: 1:5		SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Fender Pipe Assembly</div>		
	DRAWN	KAMC	7/7/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22346	
				SCALE: 1:3		SHEET 2 OF 2



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: Schedule 40, 1 in. 6061 Aluminum Pipe DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Fender Pipe</h1></div>		
	DRAWN	KAMC	7/7/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
SIZE		DWG. NO.		REV		
C		GE-22347				
SCALE: 1:4			SHEET 1 OF 1			





Trim vinyl at hole locations
8 places

Vinyl applied to one face. Front
and back of part are identical.

GE-22344

- Notes:
1. Tag or label with part number
 2. Standard vinyl (not mesh)

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	CO	9/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE: Fender Front Polycarbonate with Vinyl		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	MATERIAL/FINISH: Polycarbonate/VInyl	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING				C	GE-22348	
				SCALE: 1:4		SHEET 1 OF 1

4

3

2

1

D

D

C

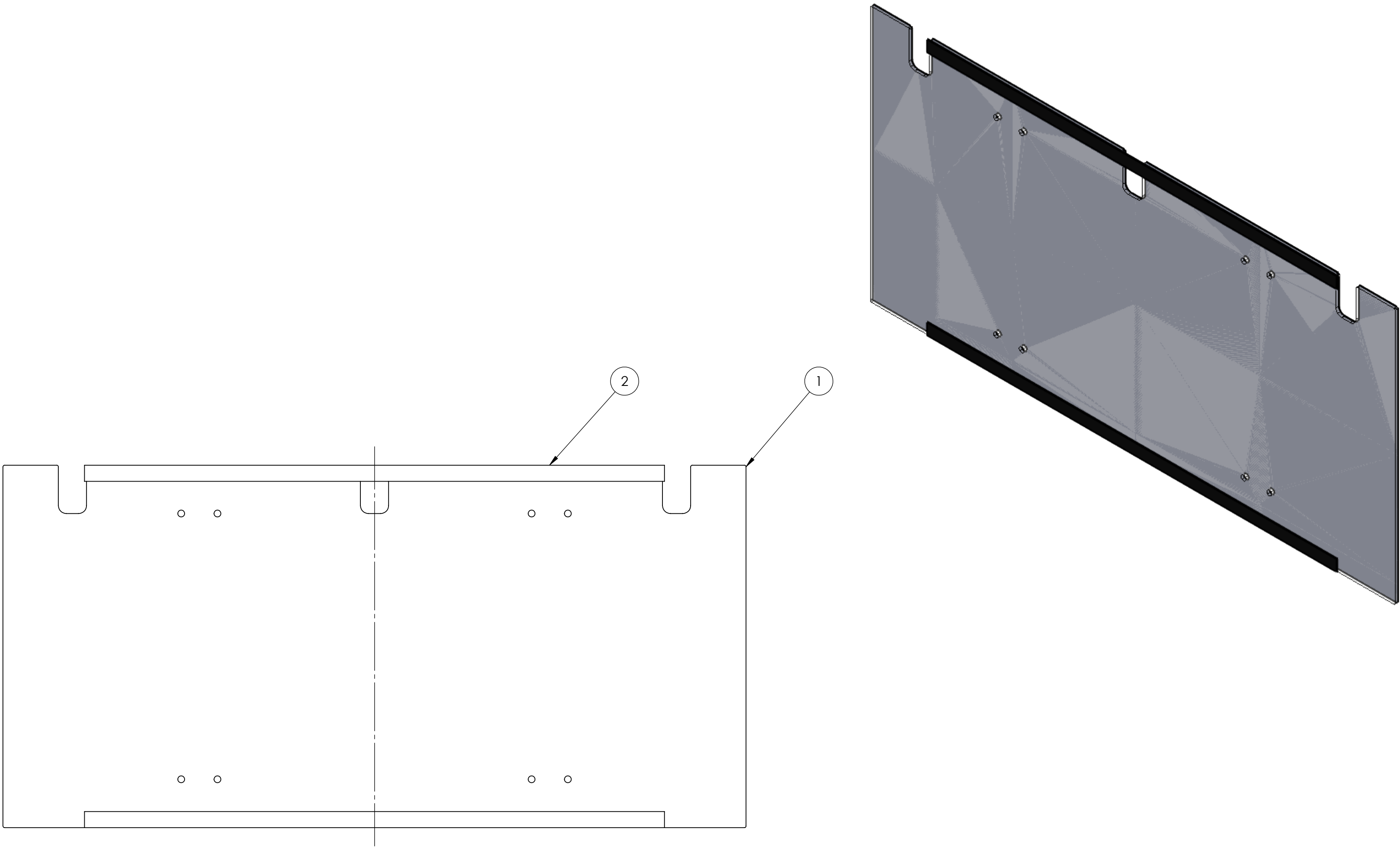
C

B

B

A

A



Notes:

- 1. Make sure surface of (1) is clean prior to loop applicaton.
- 2. Attach (2) to (1) in locations shown. (2) should be attached on side of (1) without vinyl.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22348	Fender Front Polycarbonate with Vinyl	1
2	Loop_1_36	1" x 36" Loop, Adhesive Backed	2

4

3

2

1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

11/3/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE: Fender Vinyl
Polycarbonate
with Loop

SIZE

DWG. NO.

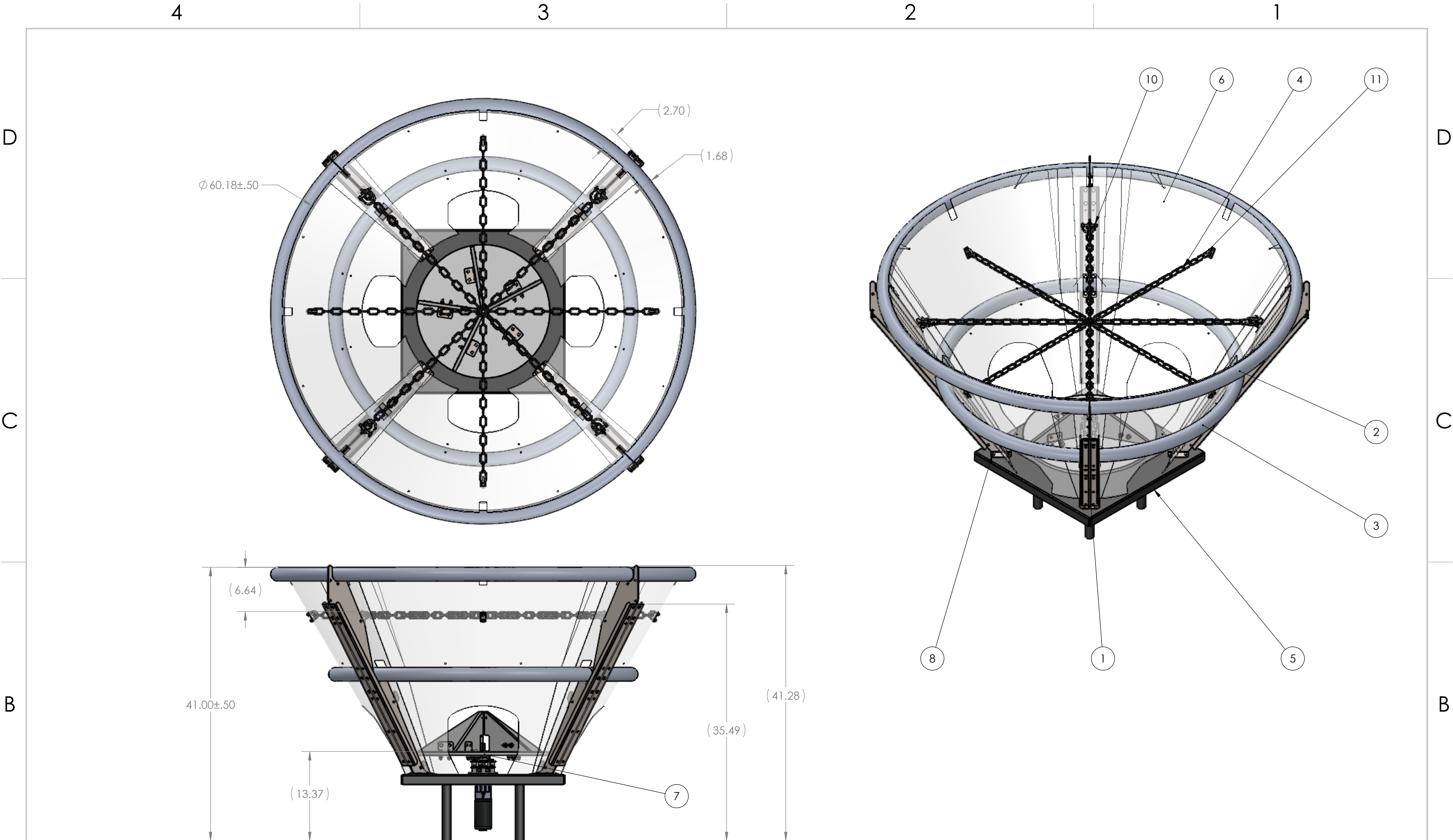
REV

C

GE-22349

SCALE: 1:5

SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22352	Lower Hub Ring Support Assembly	4
2	GE-22353	Lower Hub Top Ring	1
3	GE-22354	Lower Hub Bottom Ring	1
4	GE-22355	Lower Hub Chain	4
5	GE-22356	Lower Hub Base	1
6	GE-22357	Lower Hub Panel	4
7	GE-22431	Low Agitator Assembly	1
8	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	20
9	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	20
10	pin_.25_2.375_wirelockclevis	Wire-Lock Clevis Pin	4
11	Ubolt_.25_.75_1.25	U-Bolt 1/4-20 x 3/4 ID x 1-1/4 height	4

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

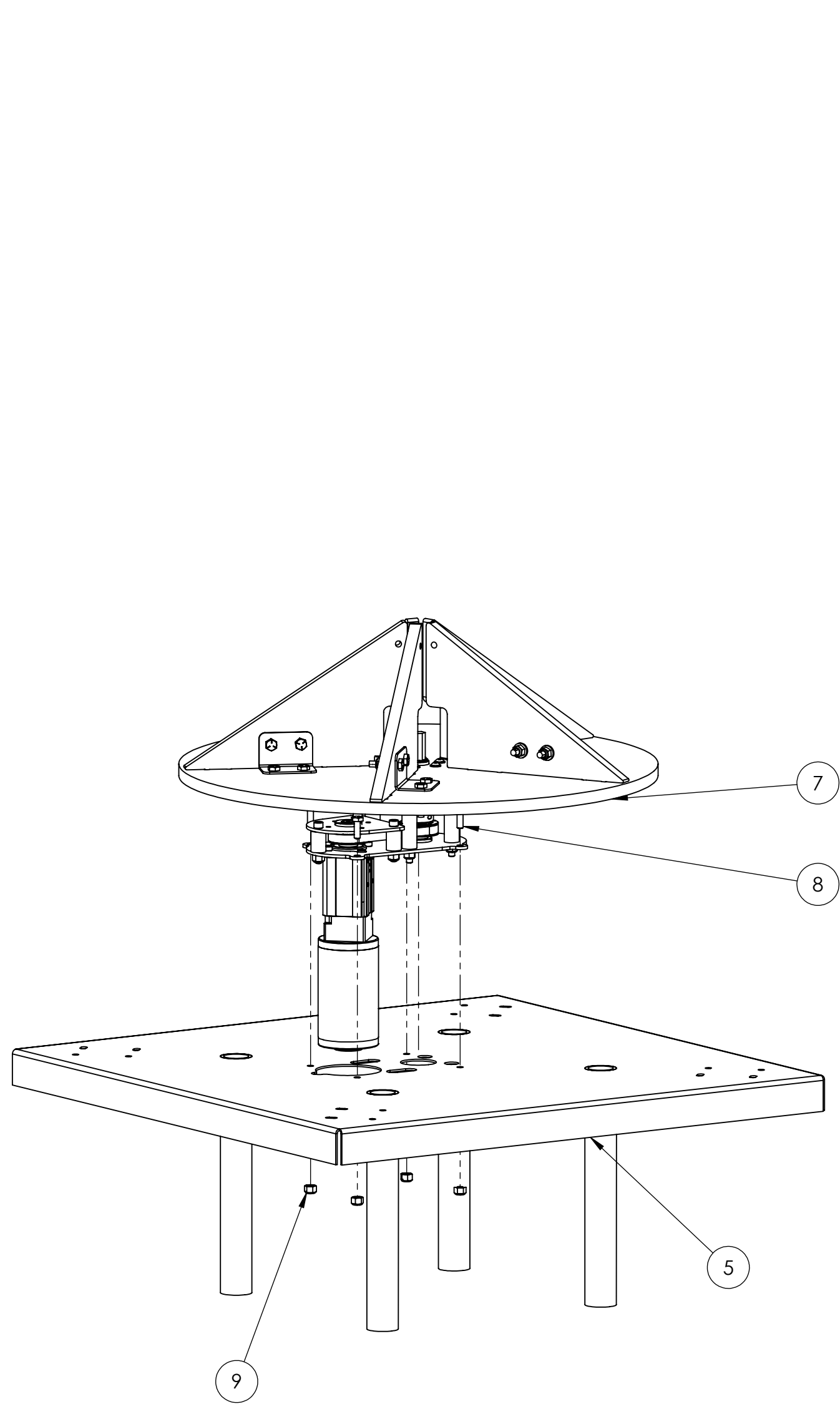
FIELD	NAME	DATE
DRAWN	CO	12/29/2021

PROPRIETARY AND CONFIDENTIAL
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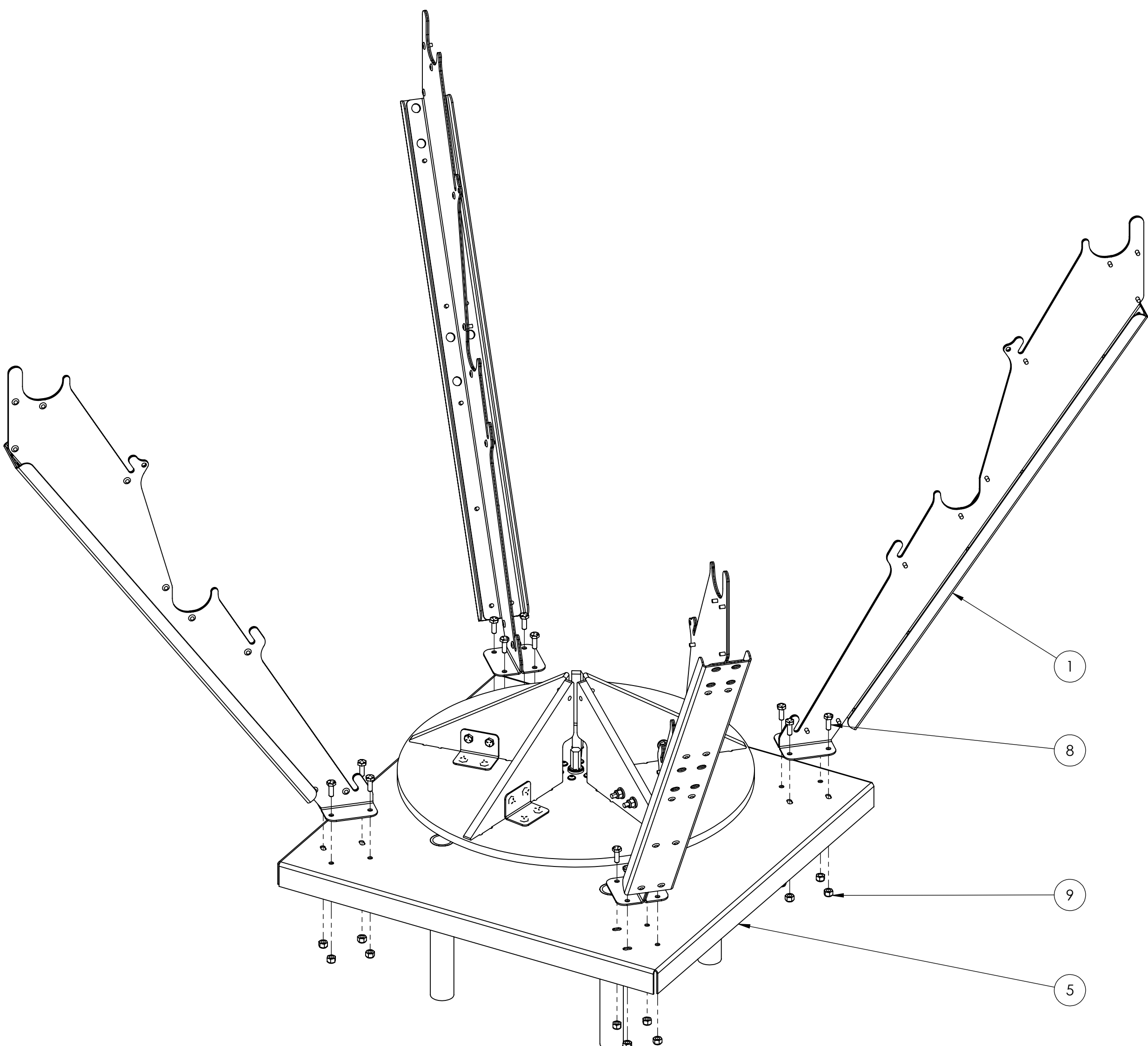
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Lower Hub		
SIZE C	DWG. NO. GE-22351	REV
SCALE: 1:10		SHEET 1 OF 4





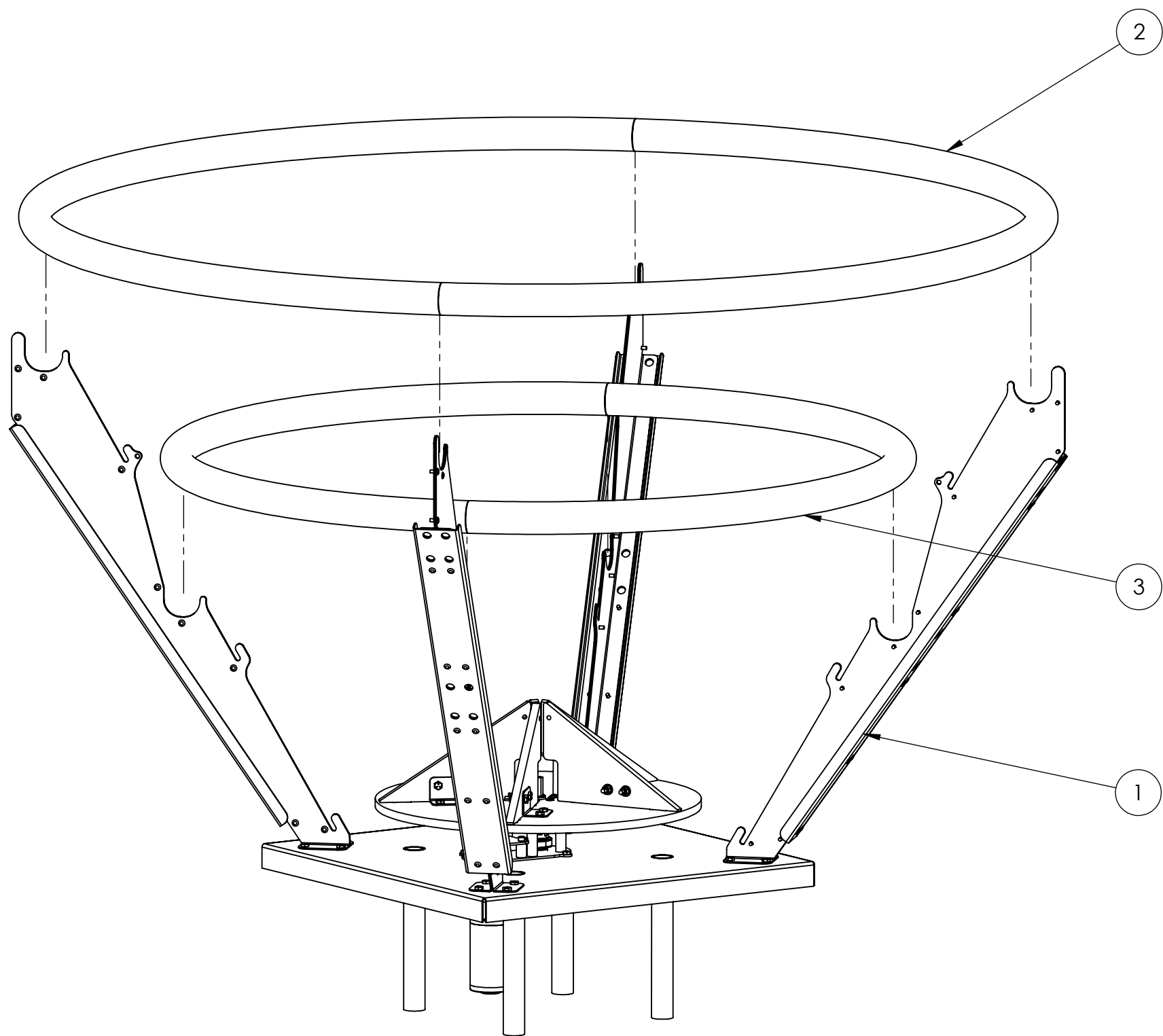
Notes:
1. Attach (7) to (5) as shown using (8) and (9).



Notes:
1. Attach (1) to (5) using (8) and (9).

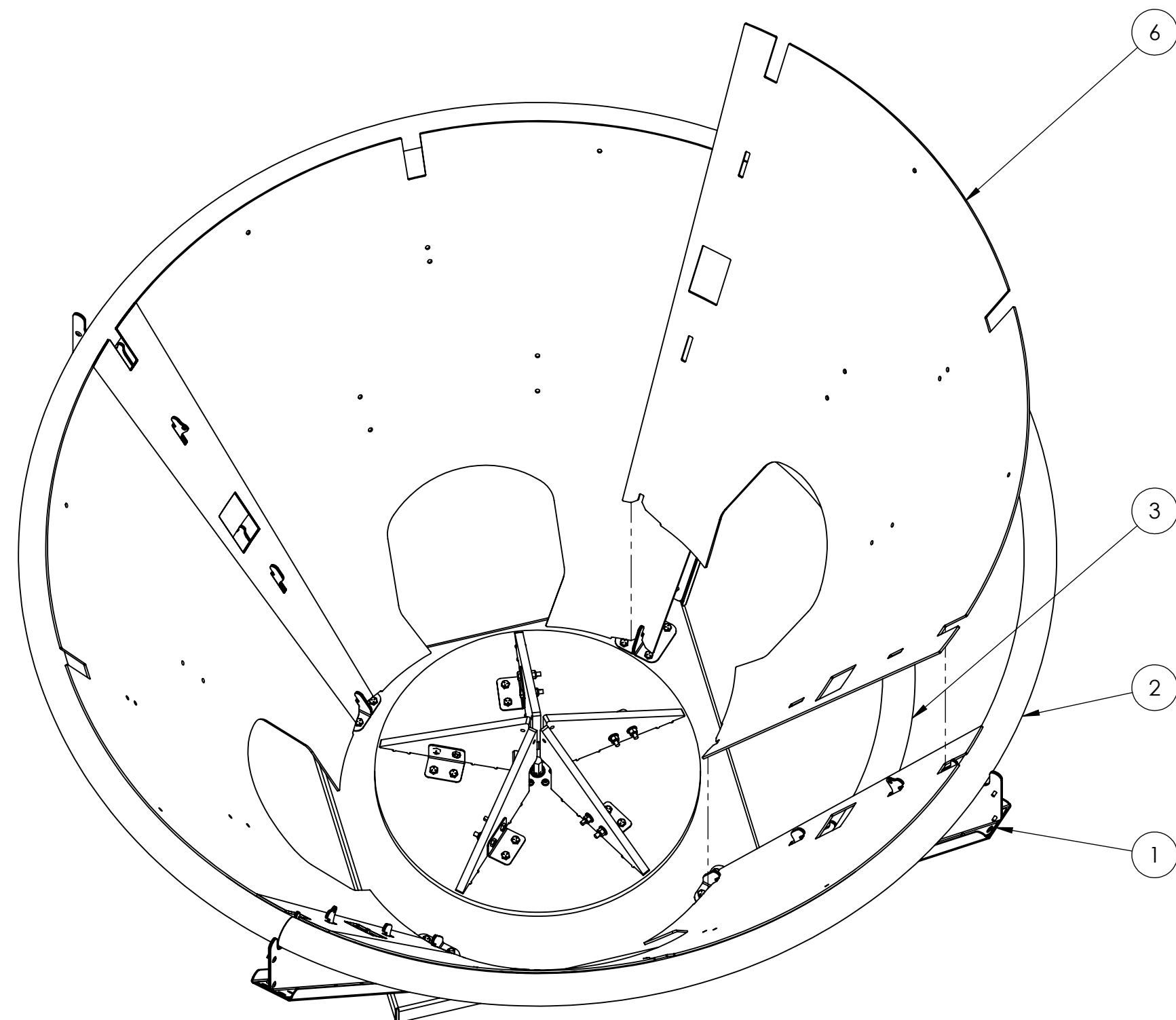
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	CO	12/29/2021
	PROPRIETARY AND CONFIDENTIAL		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS:		
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.		

 		TITLE: Lower Hub	
SIZE C	DWG. NO. GE-22351		REV
SCALE: 1:5		SHEET 2 OF 4	





Notes:

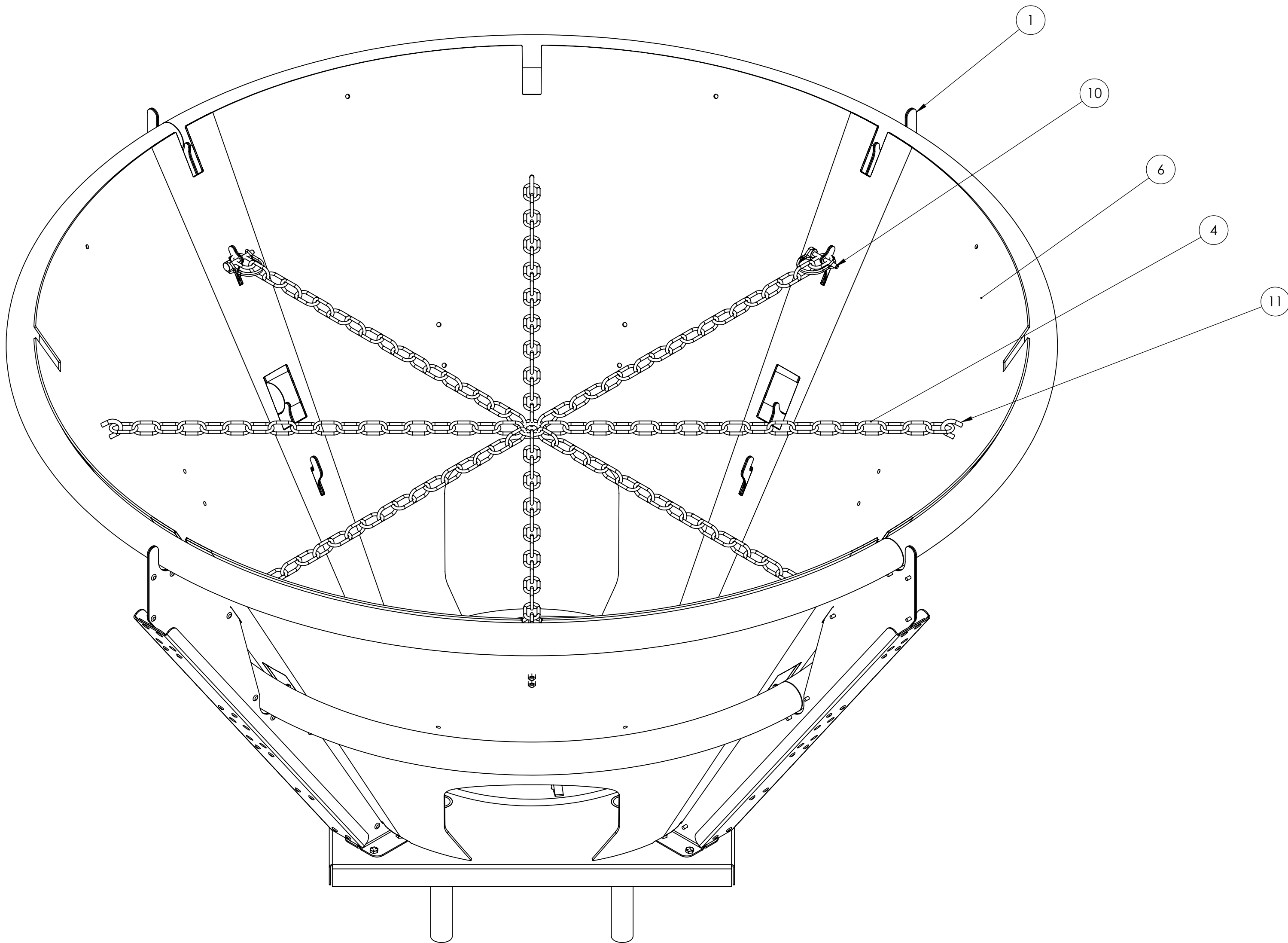
1. Attach (3) and (2) to each (1) using 120 lb. cable ties.



Notes:



1. Insert all (6) into the assembly, bending into place and aligning with the hooks on (1).
2. Cable tie (6) to (2) and (3).

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.50 MATERIAL/FINISH: DO NOT SCALE DRAWING	FIELD	NAME	DATE	<div></div>			
	DRAWN	CO	12/29/2021				
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				TITLE: Lower Hub		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.						
				SIZE	DWG. NO.	REV	
				C	GE-22351		
				SCALE: 1:8		SHEET 3 OF 4	

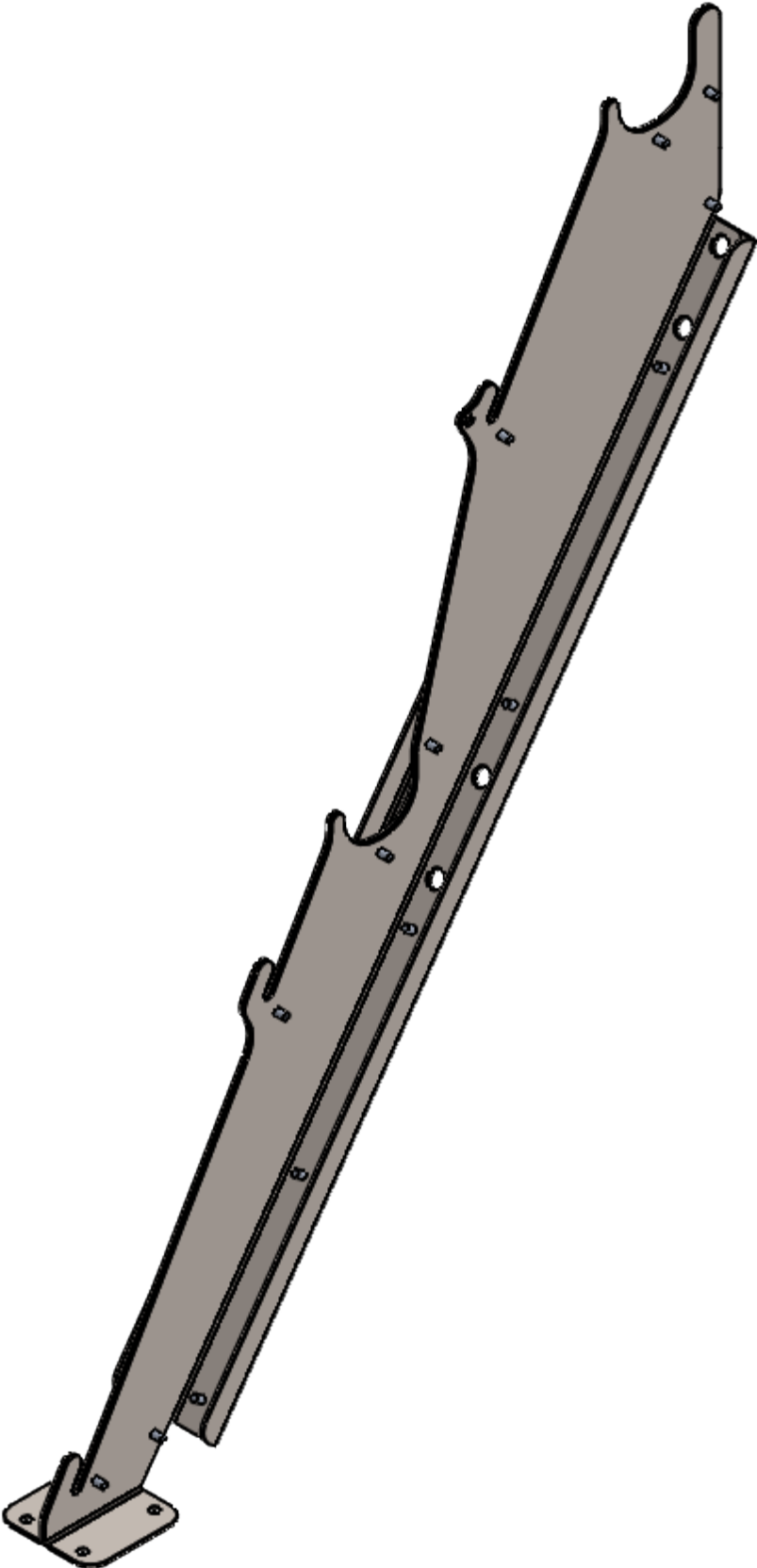


Notes:



1. Attach 4 to 1 using 10 as shown.
2. Attach 4 to 6 using 11 as shown.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
	DRAWN	CO	12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL			TITLE: Lower Hub		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22351	
DO NOT SCALE DRAWING				SCALE: 1:5		SHEET 4 OF 4

EXPLODED VIEW:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	19
2	GE-22352-01	Ring Support Left Side	1
3	GE-22352-02	Ring Support Right Side	1
4	GE-22352-03	Ring Support Back	1

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>		
		DRAWN	KAMC	6/16/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Hub Ring Support Assembly		
MATERIAL/FINISH: Rivets should be plated or stainless steel. Tag or label with part number.		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-22352	
DO NOT SCALE DRAWING					SCALE: 1:4		SHEET 1 OF 2

4

3

2

1

D

D

C

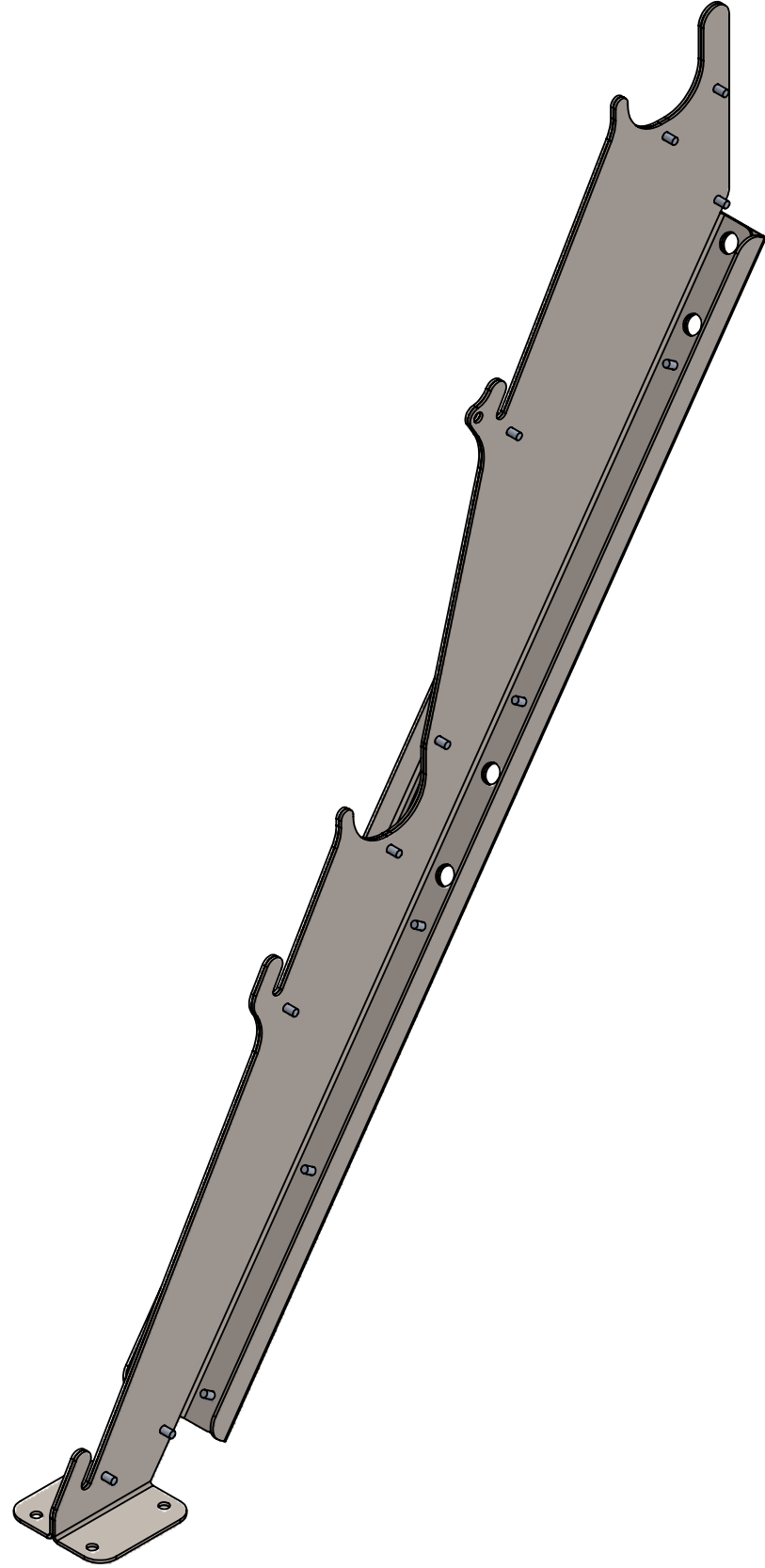
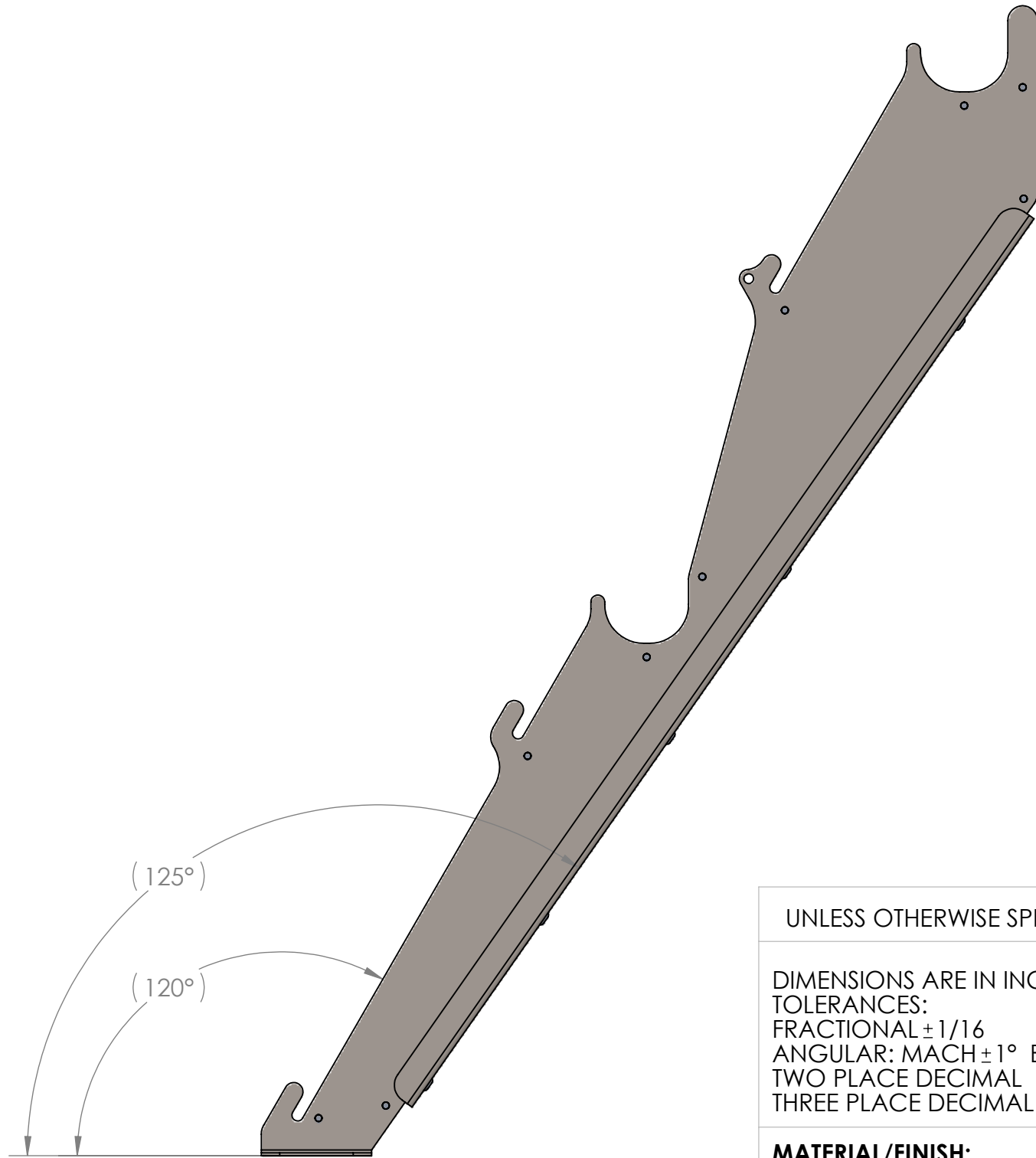
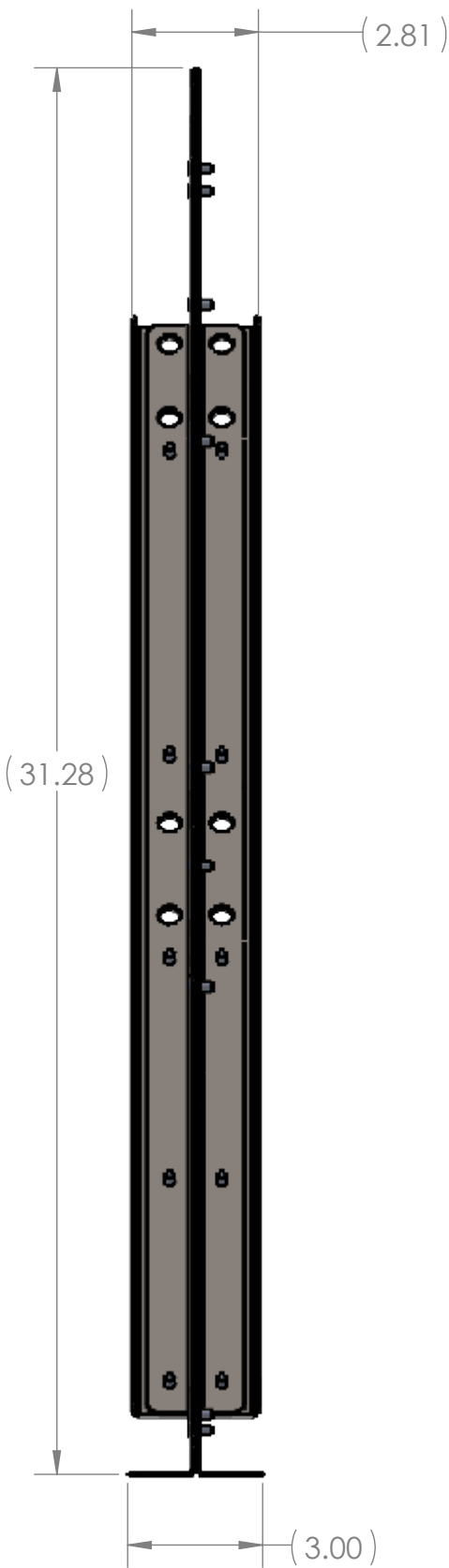
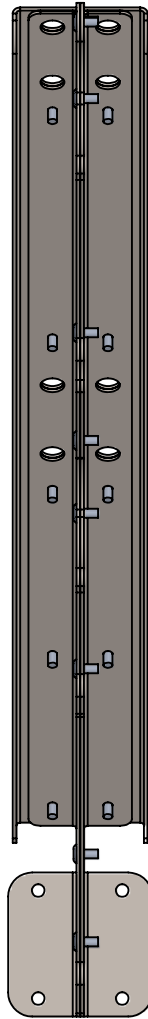
C

B

B

A

A



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Rivets should be plated or stainless steel. Tag or label with part number.

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	6/16/2021

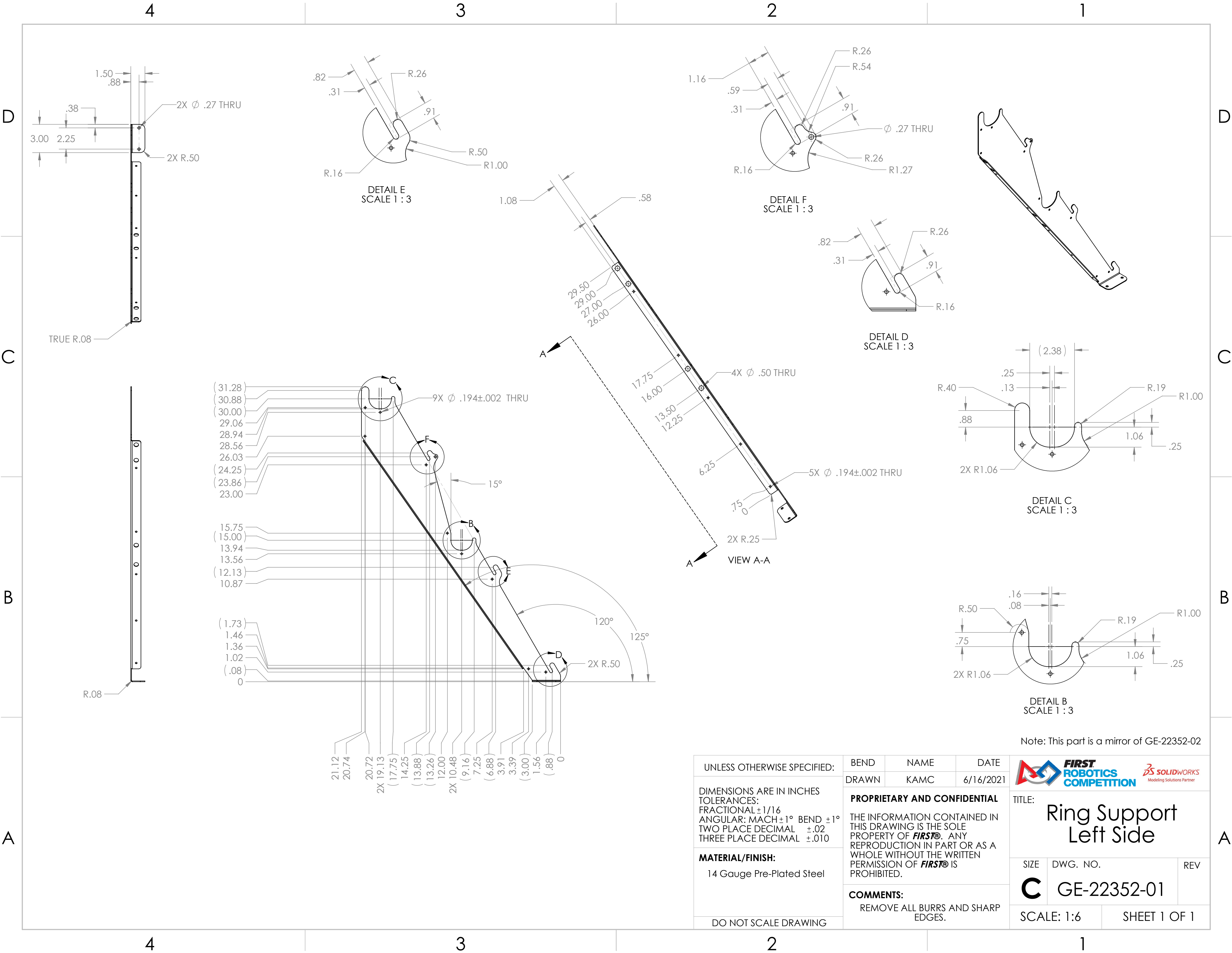
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Lower Hub Ring Support Assembly

SIZE	DWG. NO.	REV
C	GE-22352	

SCALE: 1:4 SHEET 2 OF 2



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 14 Gauge Pre-Plated Steel DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	KAMC	6/16/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

Note: This part is a mirror of GE-22352-02			
<div><div></div><div>TITLE: Ring Support Left Side</div></div>			
SIZE	DWG. NO.	REV	
C	GE-22352-01		
SCALE: 1:6		SHEET 1 OF 1	

D

C

B

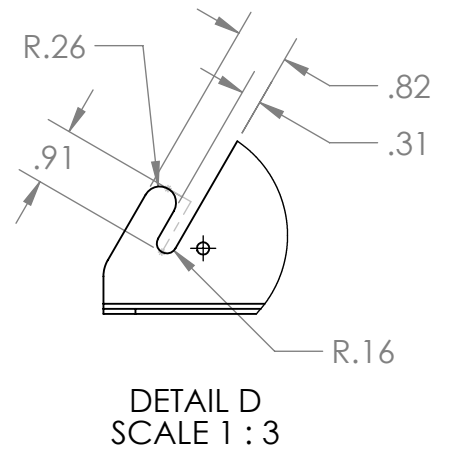
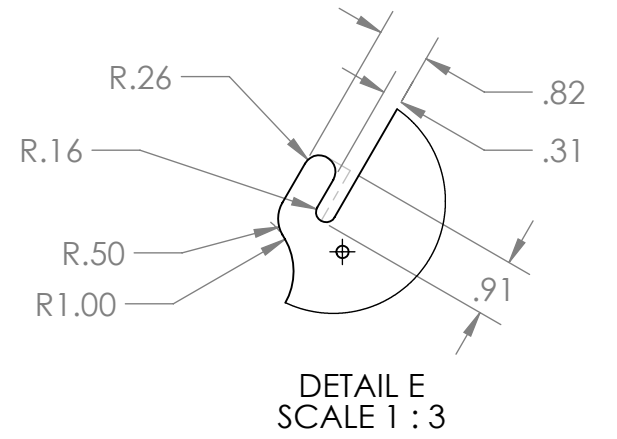
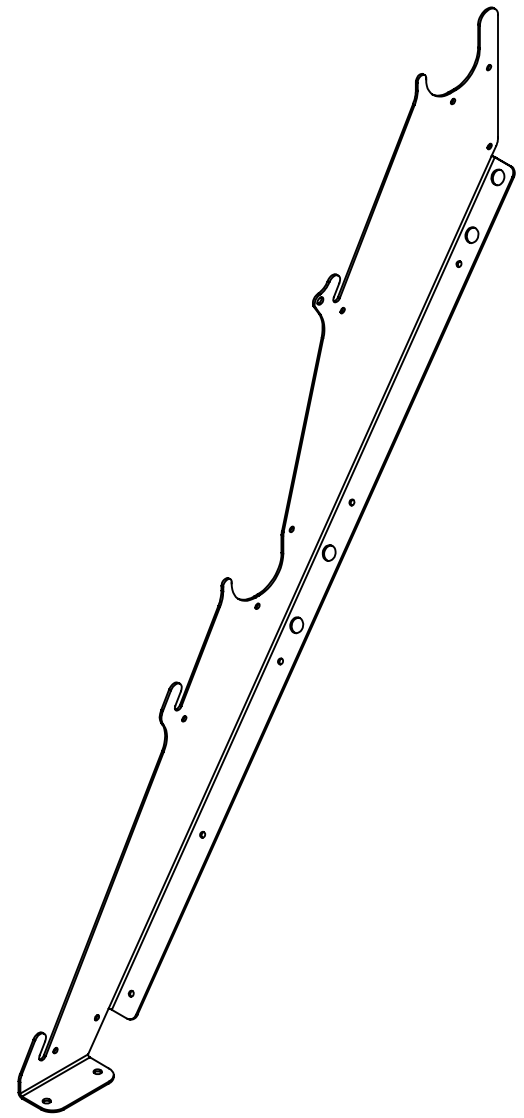
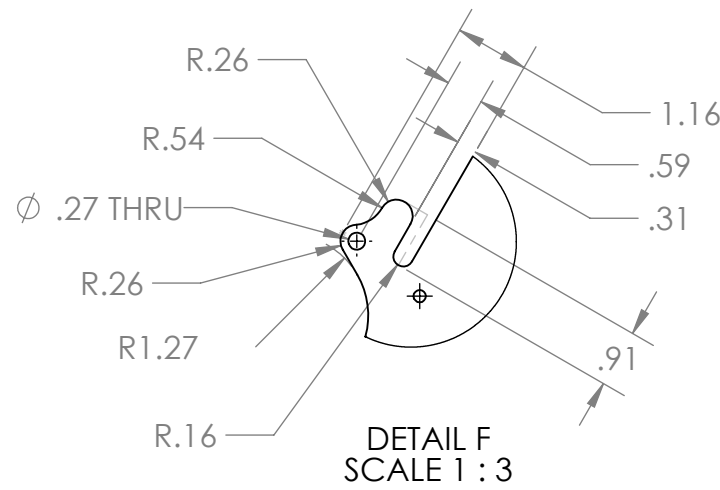
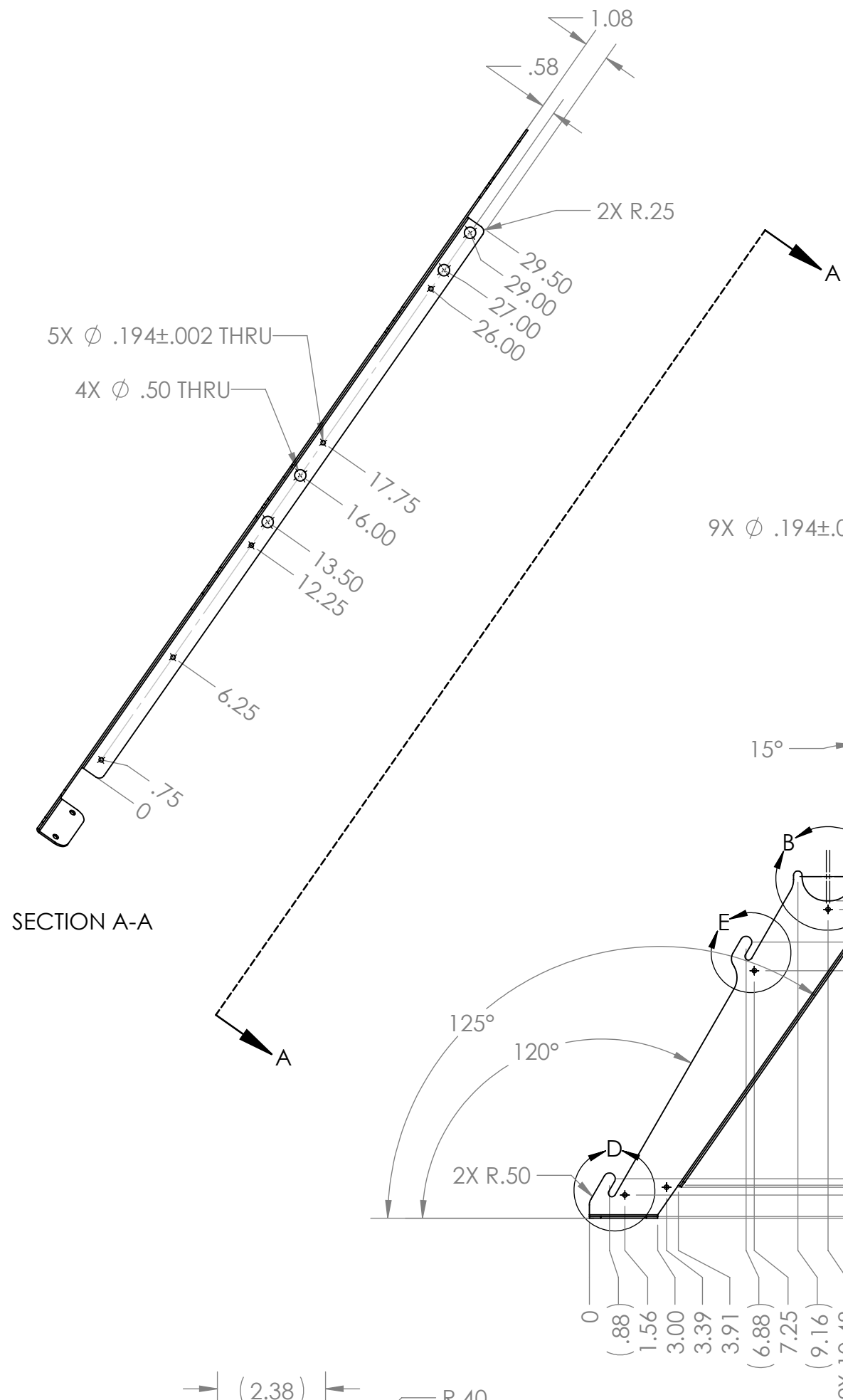
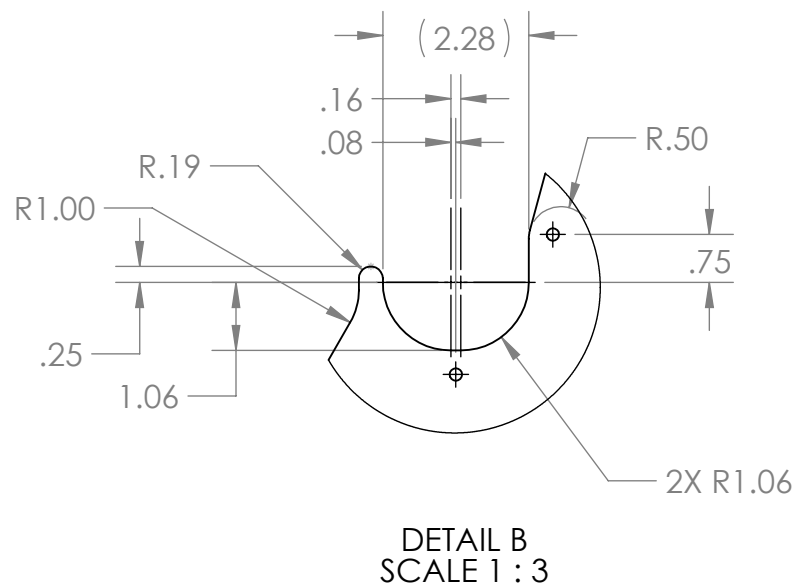
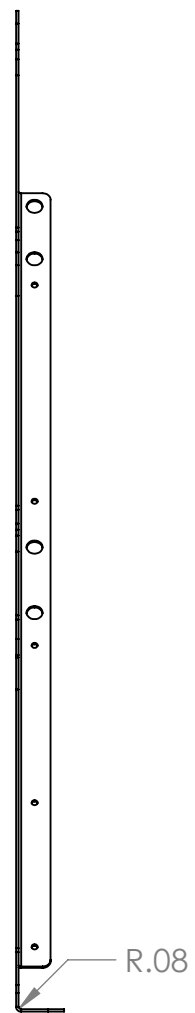
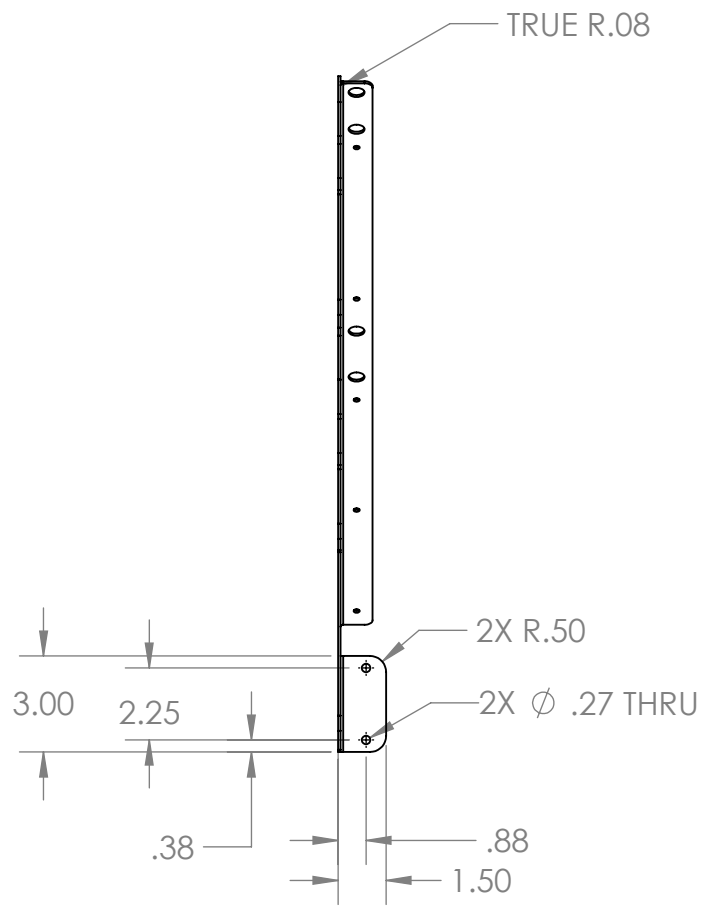
A

D



C

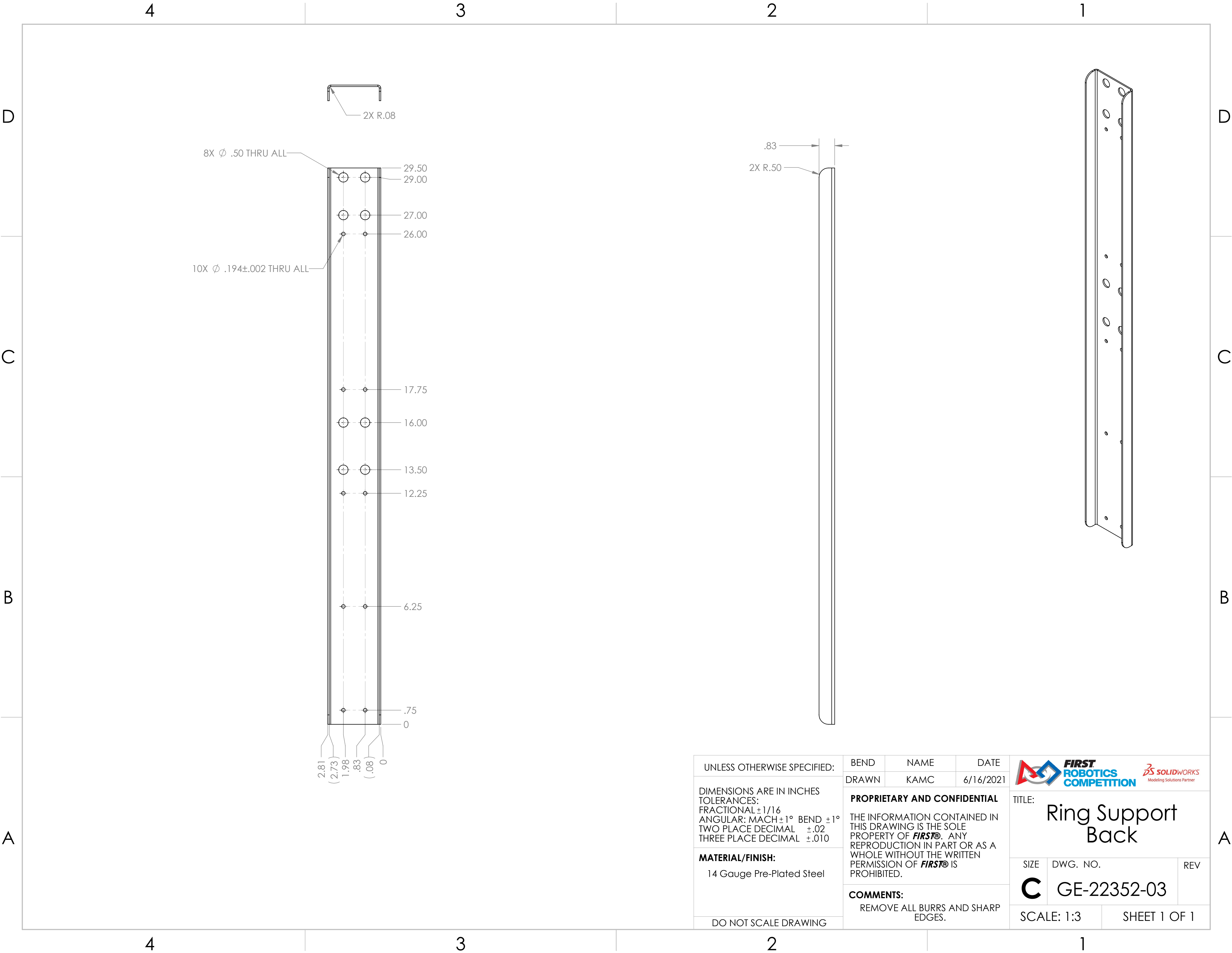
B



A

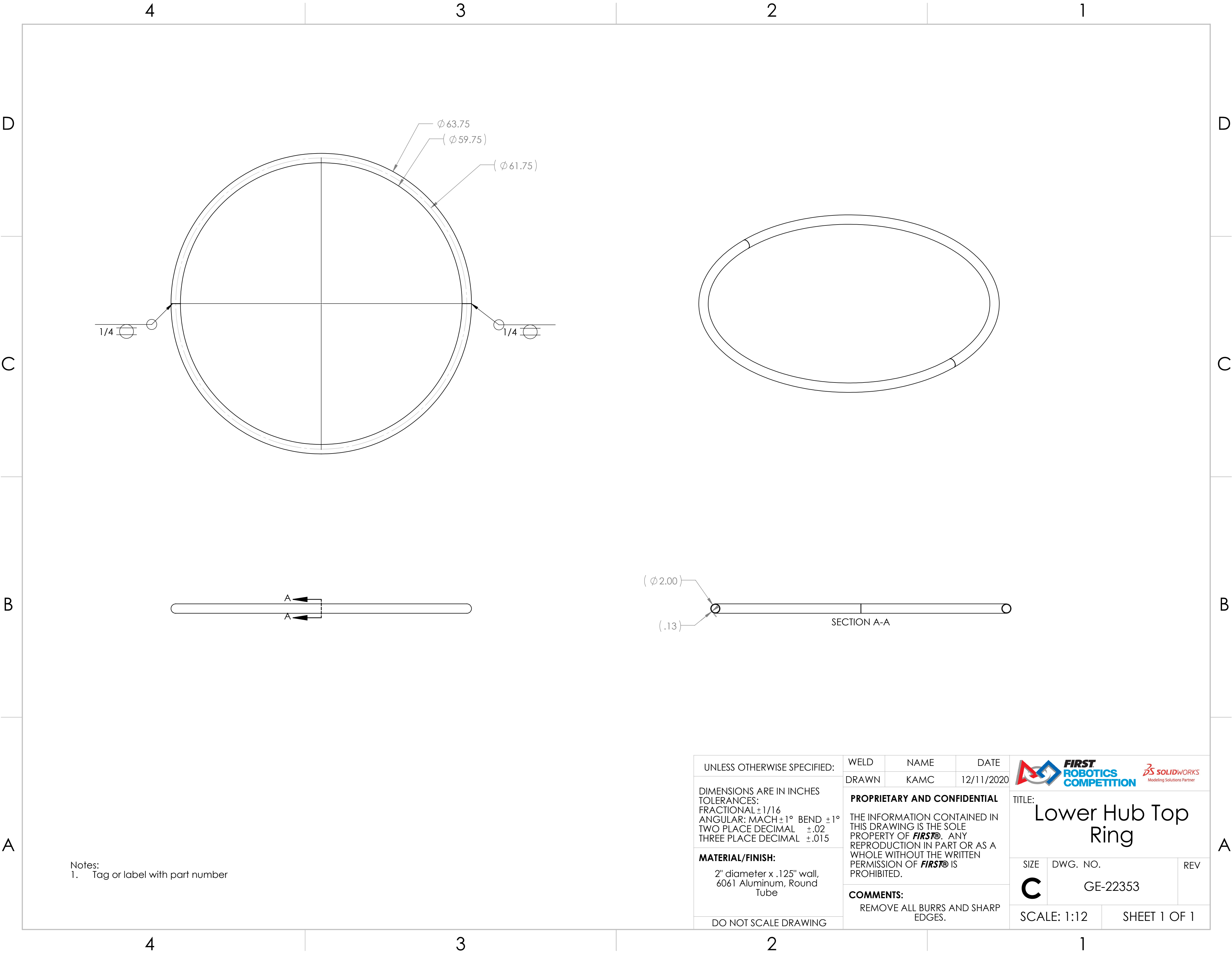


Note: This part is a mirror of GE-22352-01

UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010		DRAWN	KAMC	7/7/2021	TITLE: Ring Support Right Side	
MATERIAL/FINISH: 14 Gauge Pre-Plated Steel		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C	
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO. GE-22352-02	
					REV	
					SCALE: 1:6	
					SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 14 Gauge Pre-Plated Steel DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: Ring Support Back</div>		
	DRAWN	KAMC	6/16/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22352-03	
				SCALE: 1:3		SHEET 1 OF 1



D

D

C

C



B

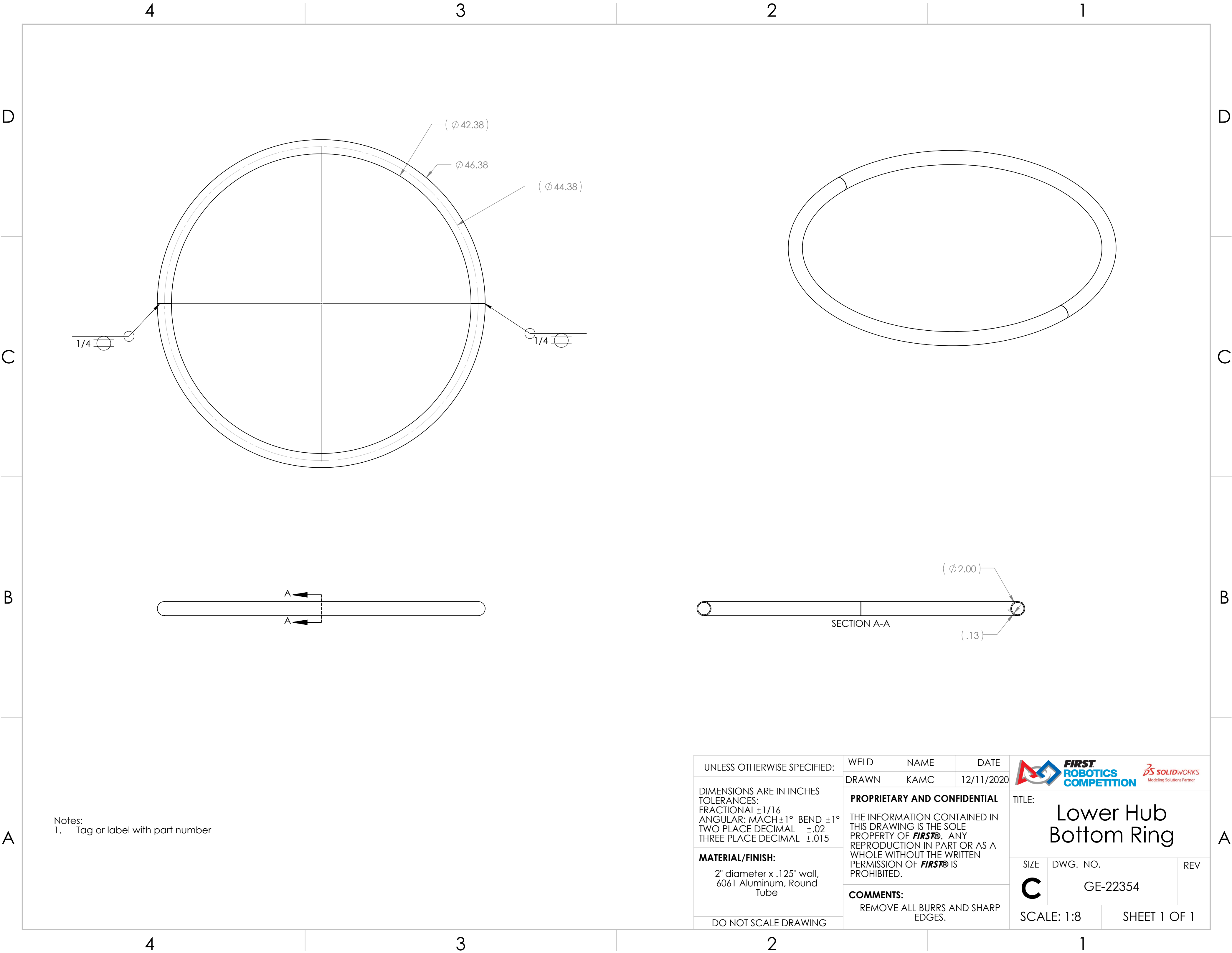
B

A



A

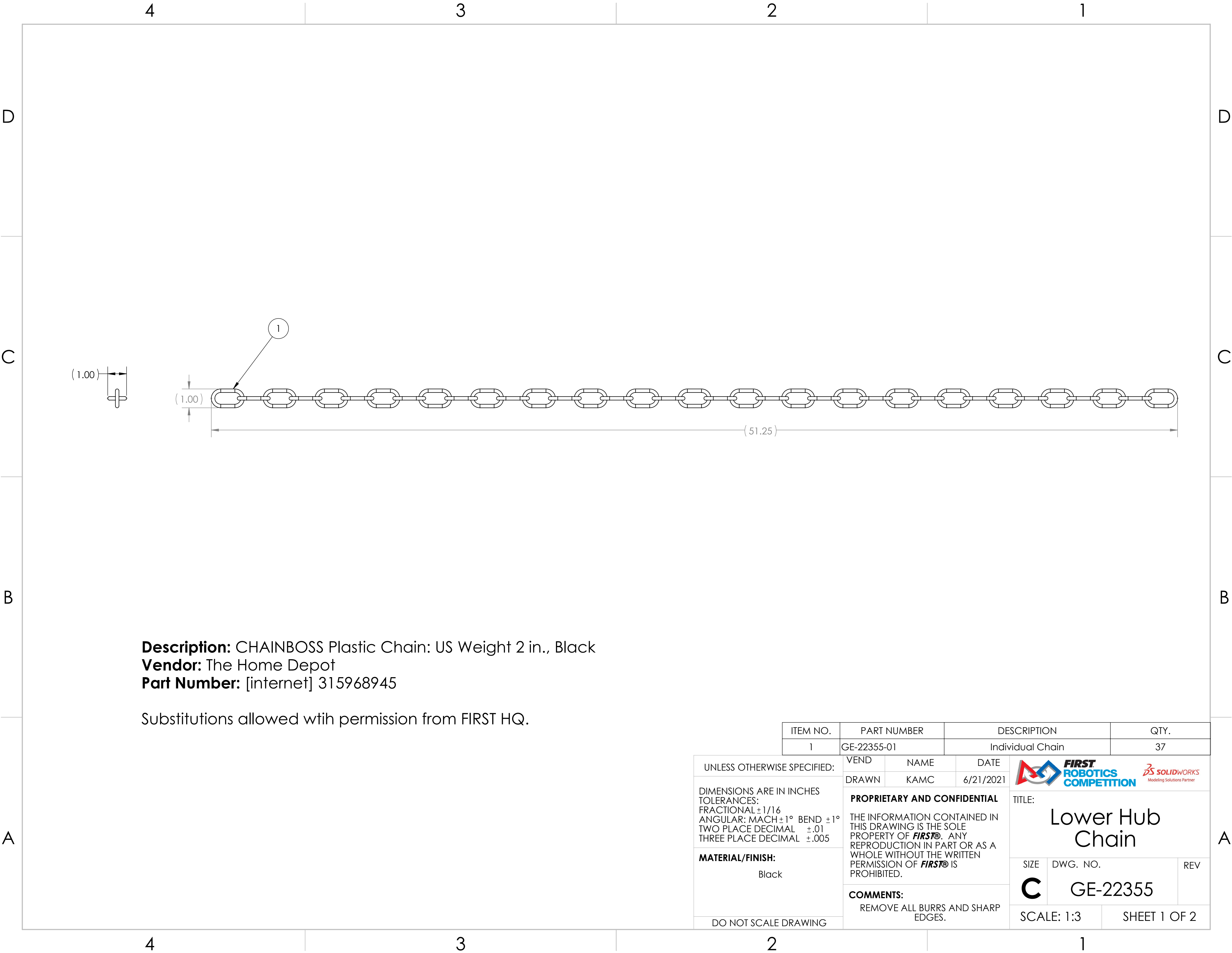
Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	WELD		NAME		DATE		<div></div>				
	DRAWN		KAMC		12/11/2020		<div>TITLE: <div>Lower Hub Top Ring</div></div>				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL										
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.										
	COMMENTS:										
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.					SIZE		DWG. NO.		REV	
						C		GE-22353			
DO NOT SCALE DRAWING						SCALE: 1:12			SHEET 1 OF 1		



Notes:
1. Tag or label with part number



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$ MATERIAL/FINISH: 2" diameter x .125" wall, 6061 Aluminum, Round Tube DO NOT SCALE DRAWING	WELD	NAME	DATE	<div></div> <div>TITLE: Lower Hub Bottom Ring</div>		
	DRAWN	KAMC	12/11/2020			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22354	
SCALE: 1:8		SHEET 1 OF 1				

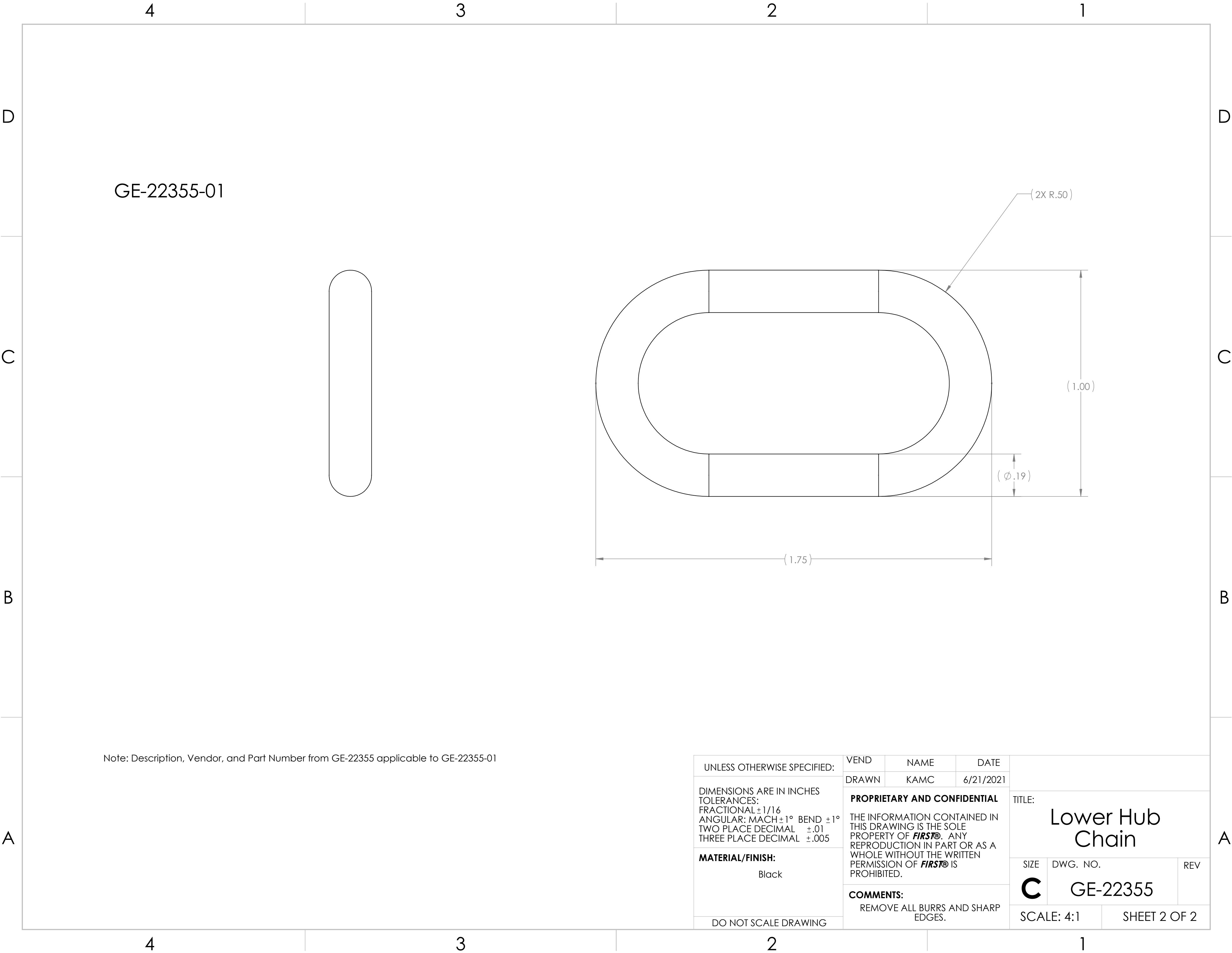


Description: CHAINBOSS Plastic Chain: US Weight 2 in., Black
Vendor: The Home Depot
Part Number: [internet] 315968945

Substitutions allowed wth permission from FIRST HQ.

		ITEM NO.		PART NUMBER		DESCRIPTION		QTY.			
		1		GE-22355-01		Individual Chain		37			
UNLESS OTHERWISE SPECIFIED:				VEND		NAME		DATE			
<div>DIMENSIONS ARE IN INCHES</div> <div>TOLERANCES:</div> <div>FRACTIONAL $\pm 1/16$</div> <div>ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$</div> <div>TWO PLACE DECIMAL $\pm .01$</div> <div>THREE PLACE DECIMAL $\pm .005$</div> <div>MATERIAL/FINISH:</div> <div>Black</div> <div>DO NOT SCALE DRAWING</div>				DRAWN		KAMC		6/21/2021			
				PROPRIETARY AND CONFIDENTIAL						<div>TITLE:</div> <div>Lower Hub Chain</div> <div>SIZE</div> <div>C</div> <div>DWG. NO.</div> <div>GE-22355</div> <div>SCALE: 1:3</div> <div>SHEET 1 OF 2</div>	
				THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.							
				COMMENTS:							
				REMOVE ALL BURRS AND SHARP EDGES.							

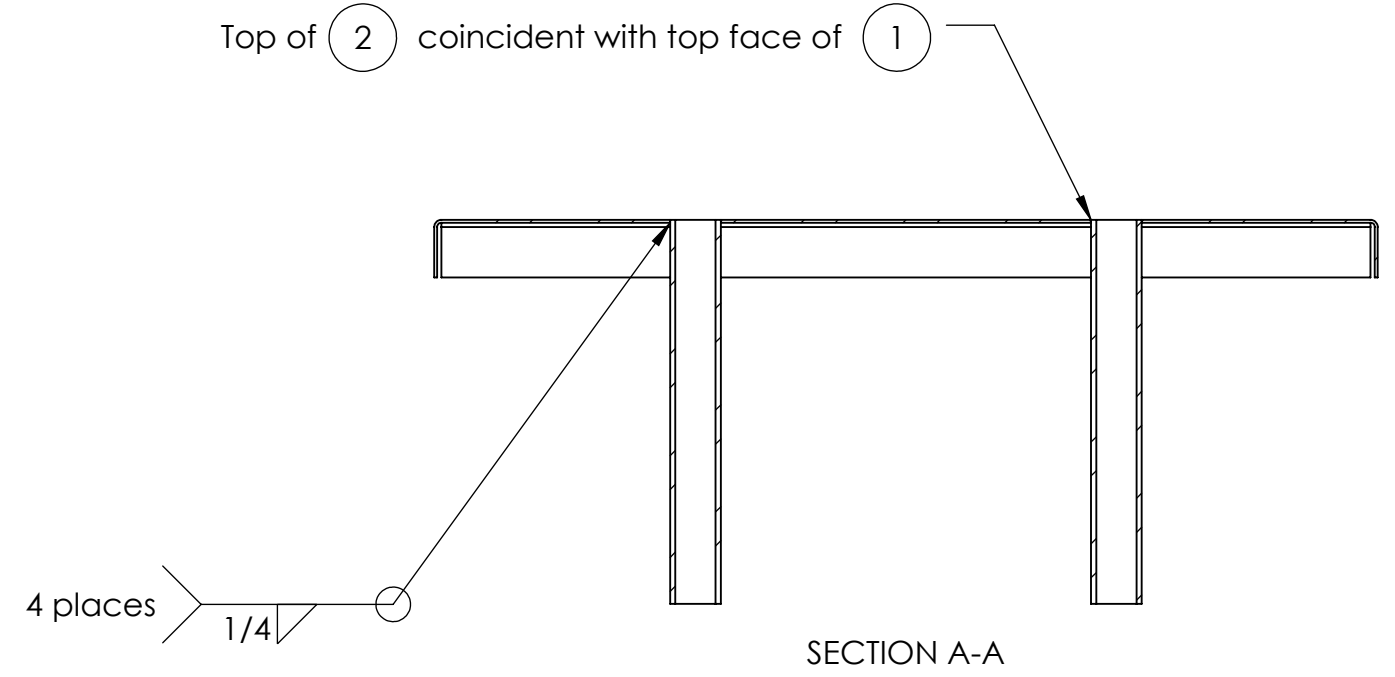
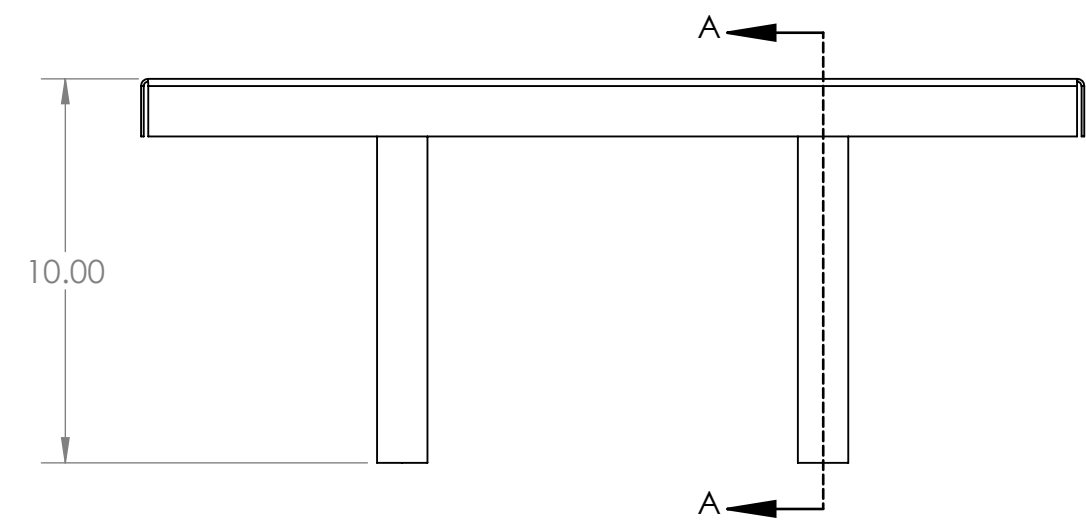
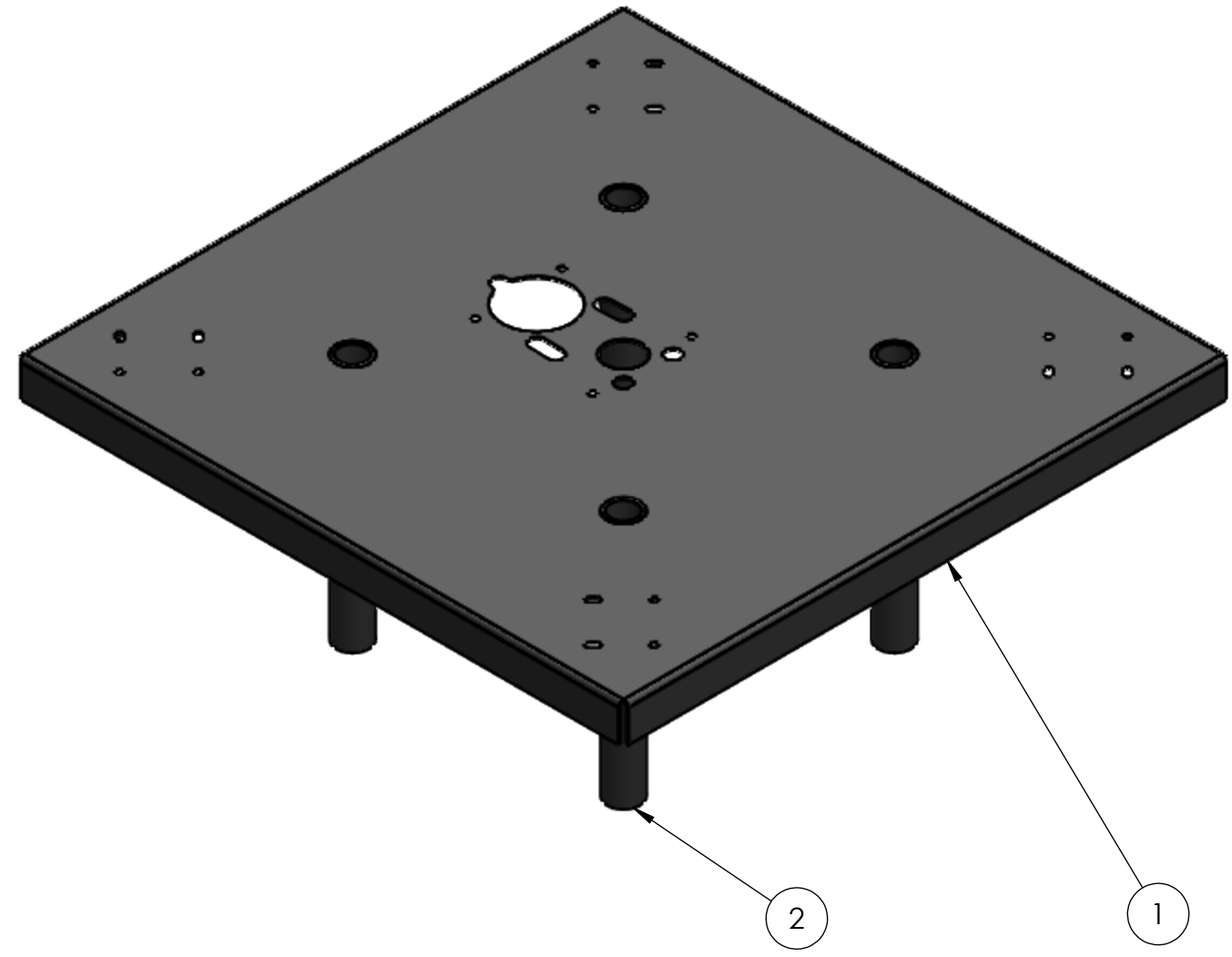
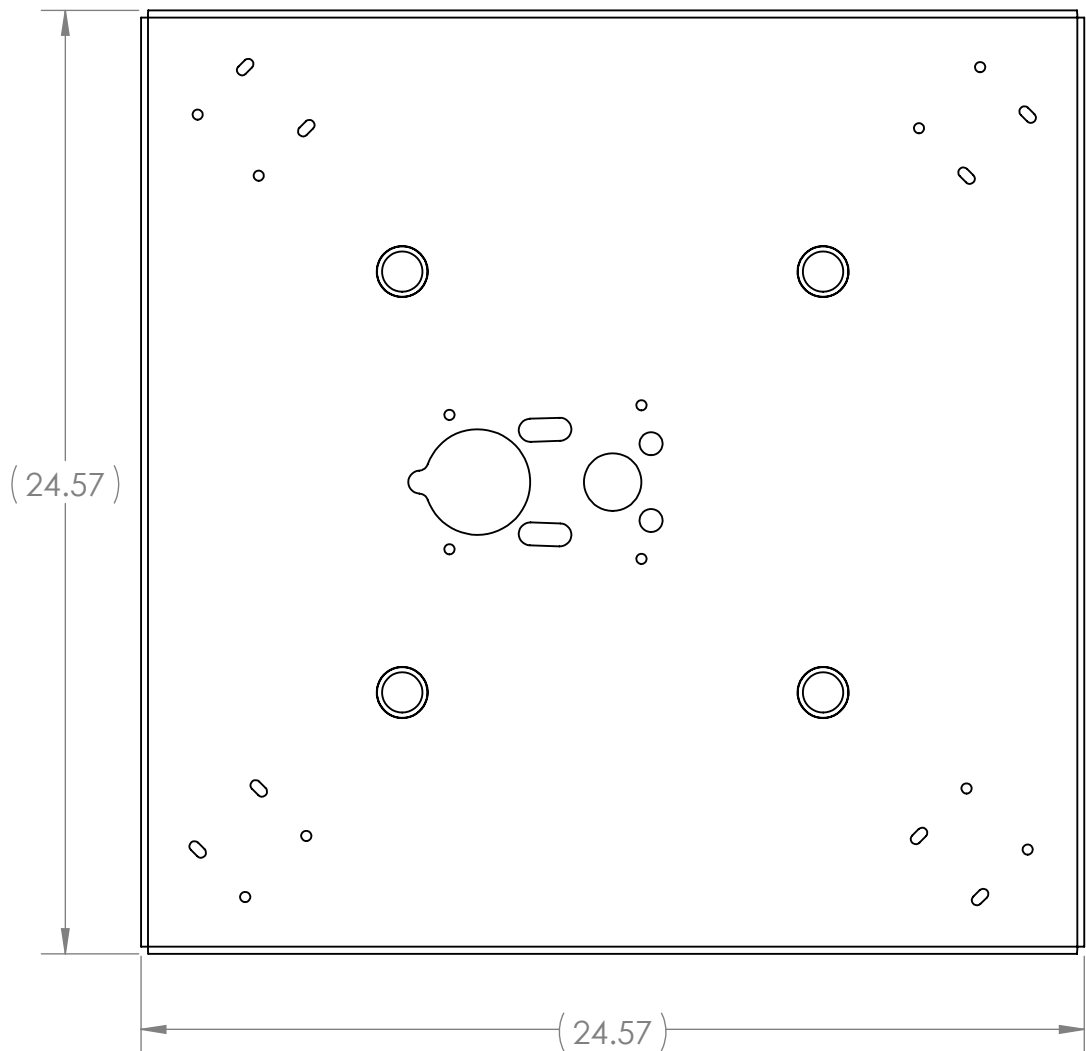




GE-22355-01

Note: Description, Vendor, and Part Number from GE-22355 applicable to GE-22355-01



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: Black DO NOT SCALE DRAWING	VEND	NAME	DATE	TITLE: Lower Hub Chain		
	DRAWN	KAMC	6/21/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
			C	GE-22355		
			SCALE: 4:1		SHEET 2 OF 2	



Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22356-01	14 Gauge A-366/1008 Cold Roll Steel	1
2	GE-22356-02	1" Schedule 40 A500 Steel	4

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	DRAWN	CO	7/22/2021
	PROPRIETARY AND CONFIDENTIAL		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH: Powder Coat Black	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			



TITLE: Lower Hub Base

SIZE	DWG. NO.	REV
C	GE-22356	

SCALE: 1:5 SHEET 1 OF 3

4 3 2 1

D

C

B

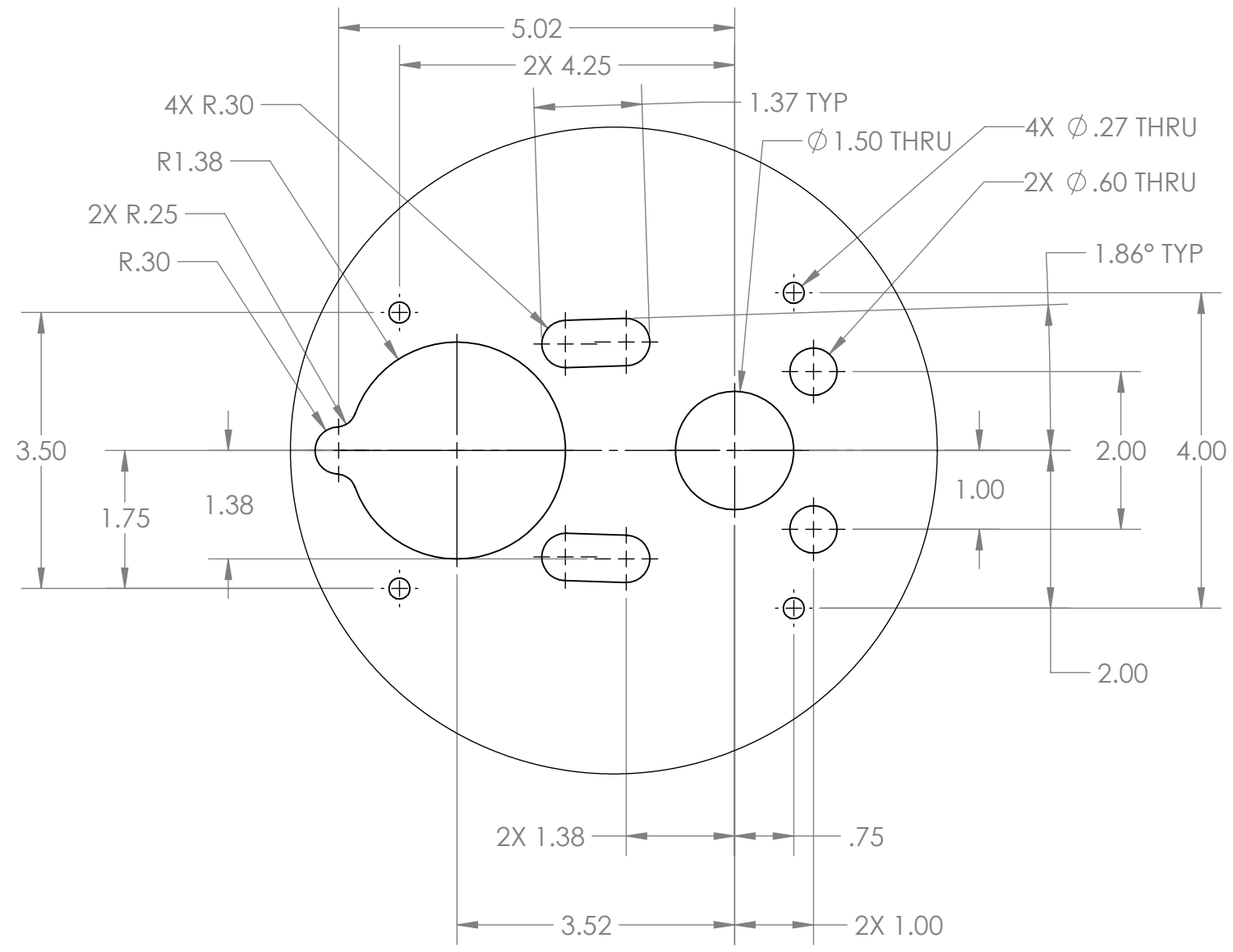
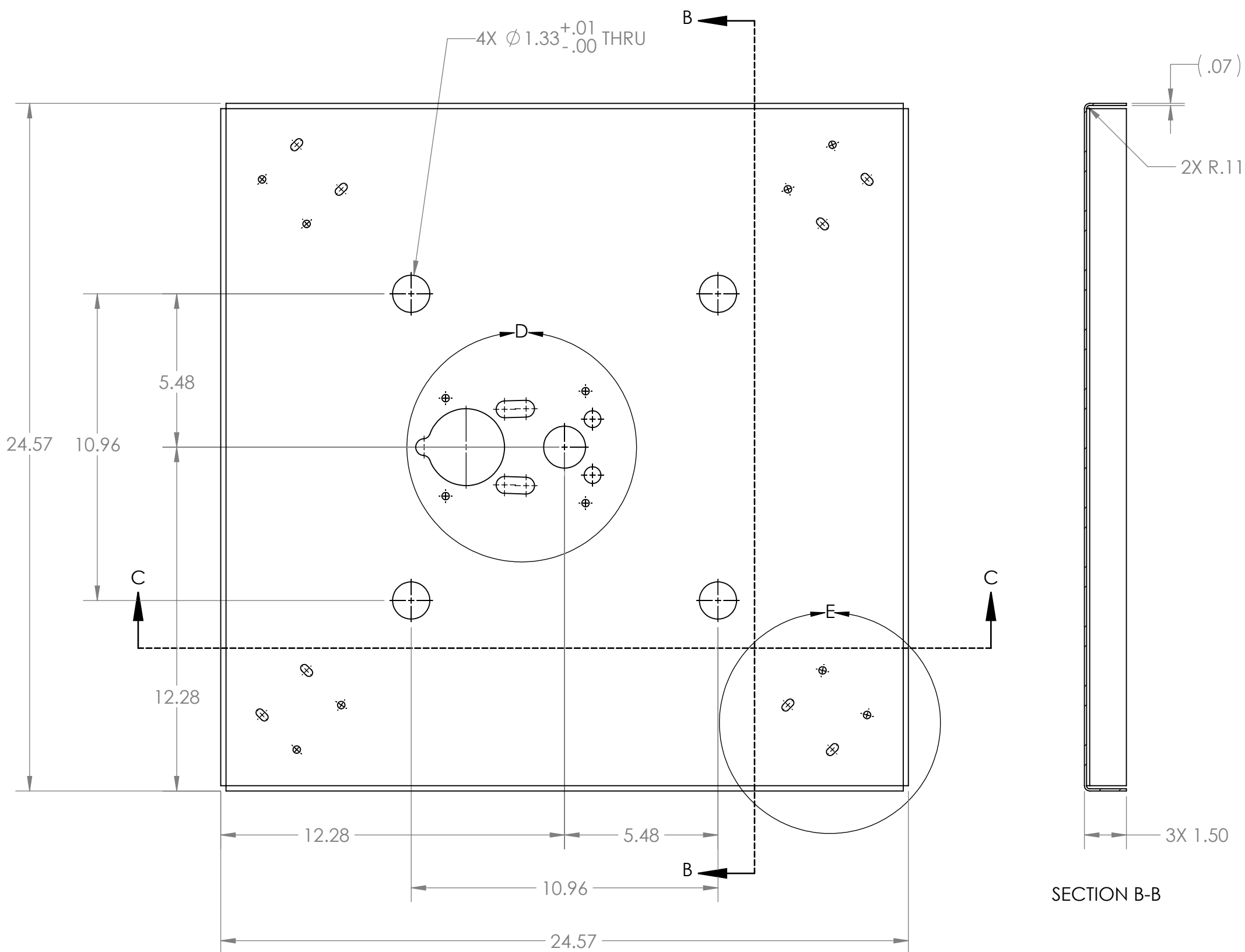
A

D

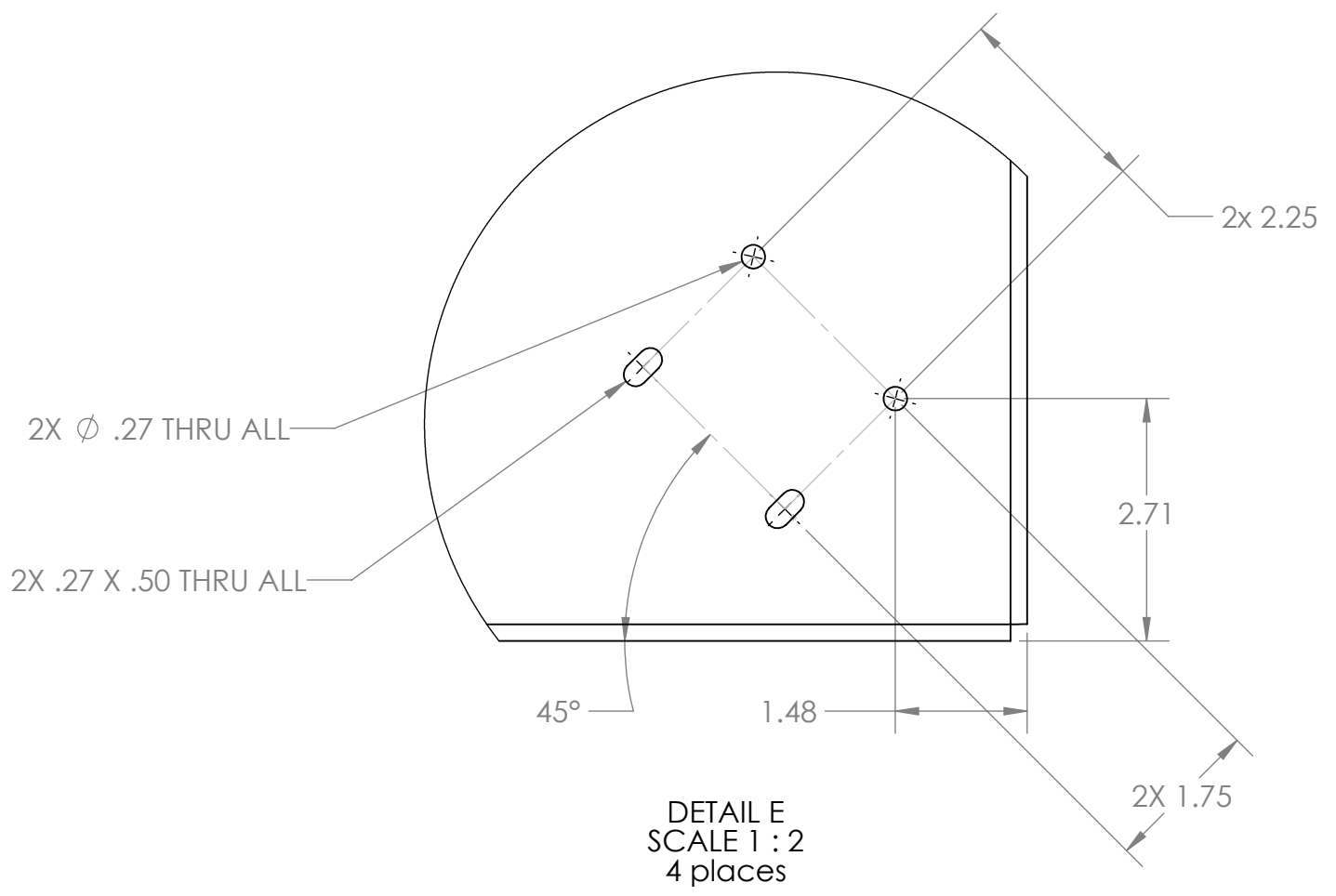
C

B

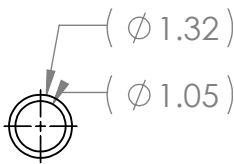
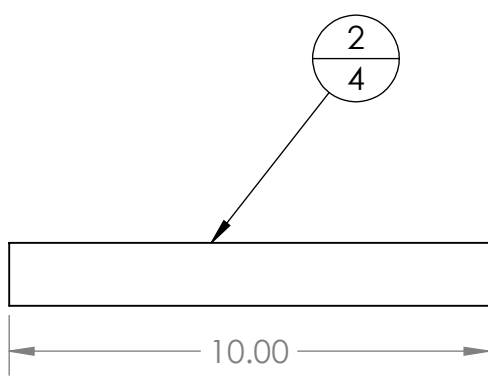
A





DETAIL D
SCALE 1 : 2



DETAIL E
SCALE 1 : 2
4 places



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div></div> <div>TITLE: Lower Hub Base</div>		
	DRAWN	CO	7/22/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL			<div>SIZE</div> <div>C</div> <div>DWG. NO.</div> <div>GE-22356</div> <div>REV</div> <div></div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS:					
MATERIAL/FINISH:	Powder Coat Black			SCALE: 1:4		
DO NOT SCALE DRAWING			SHEET 2 OF 3			

4

3

2

1

D

D

C

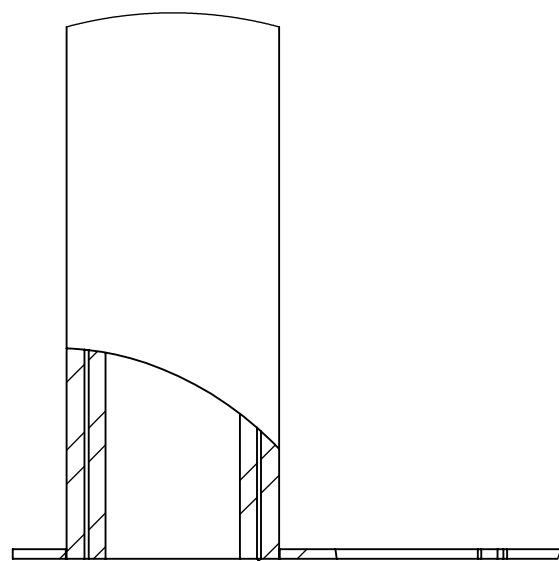
C

B

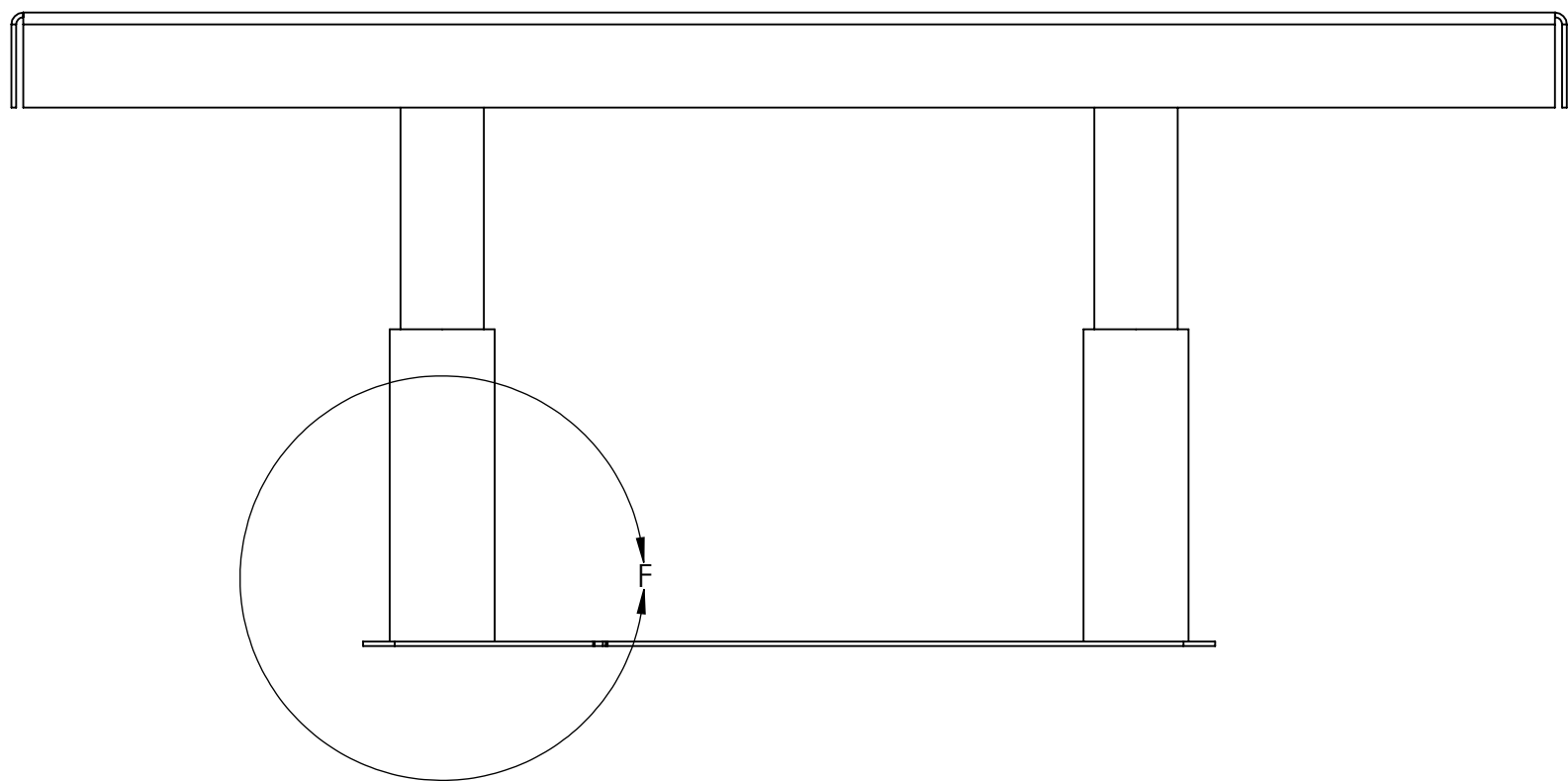
B

A

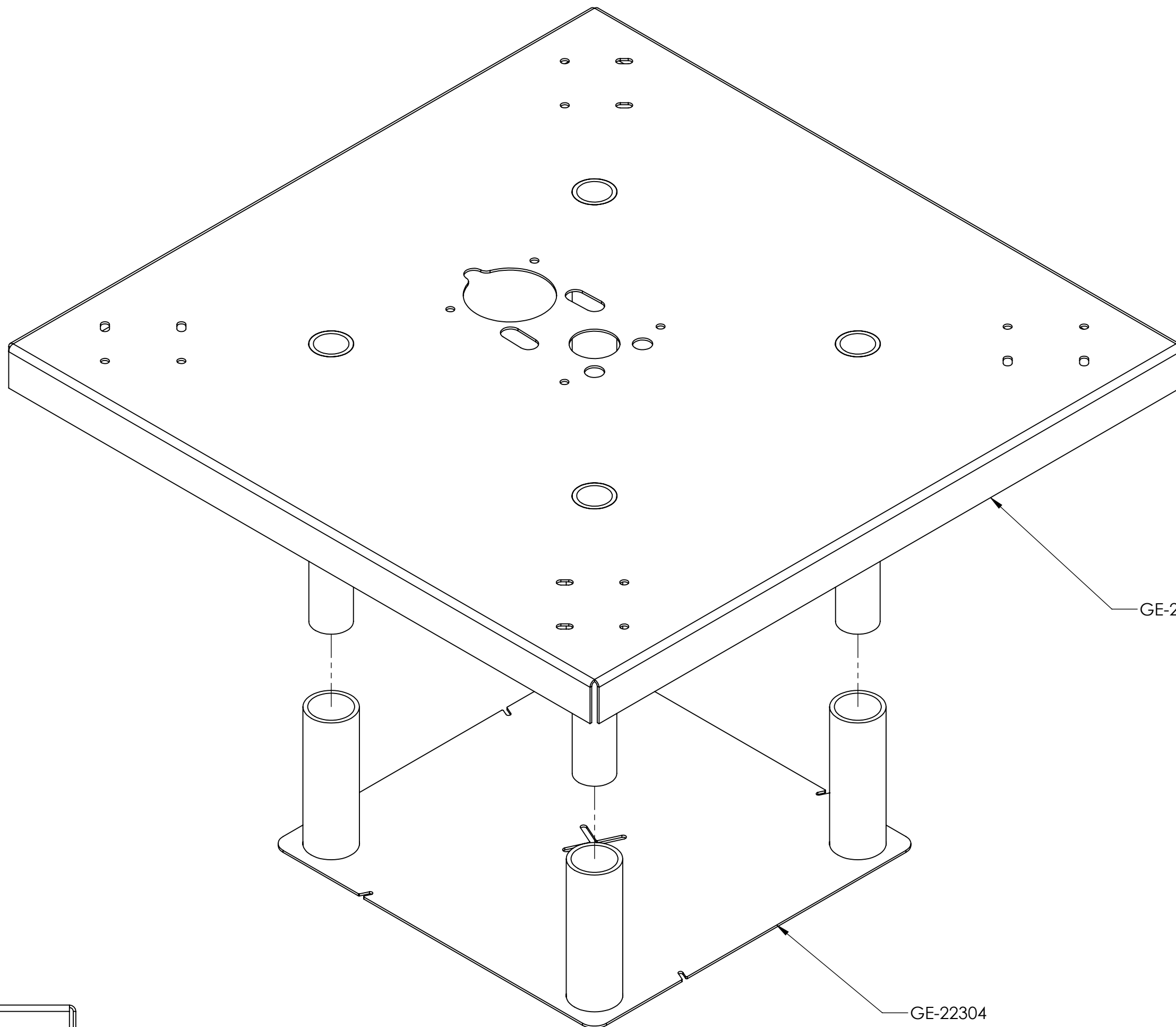
A





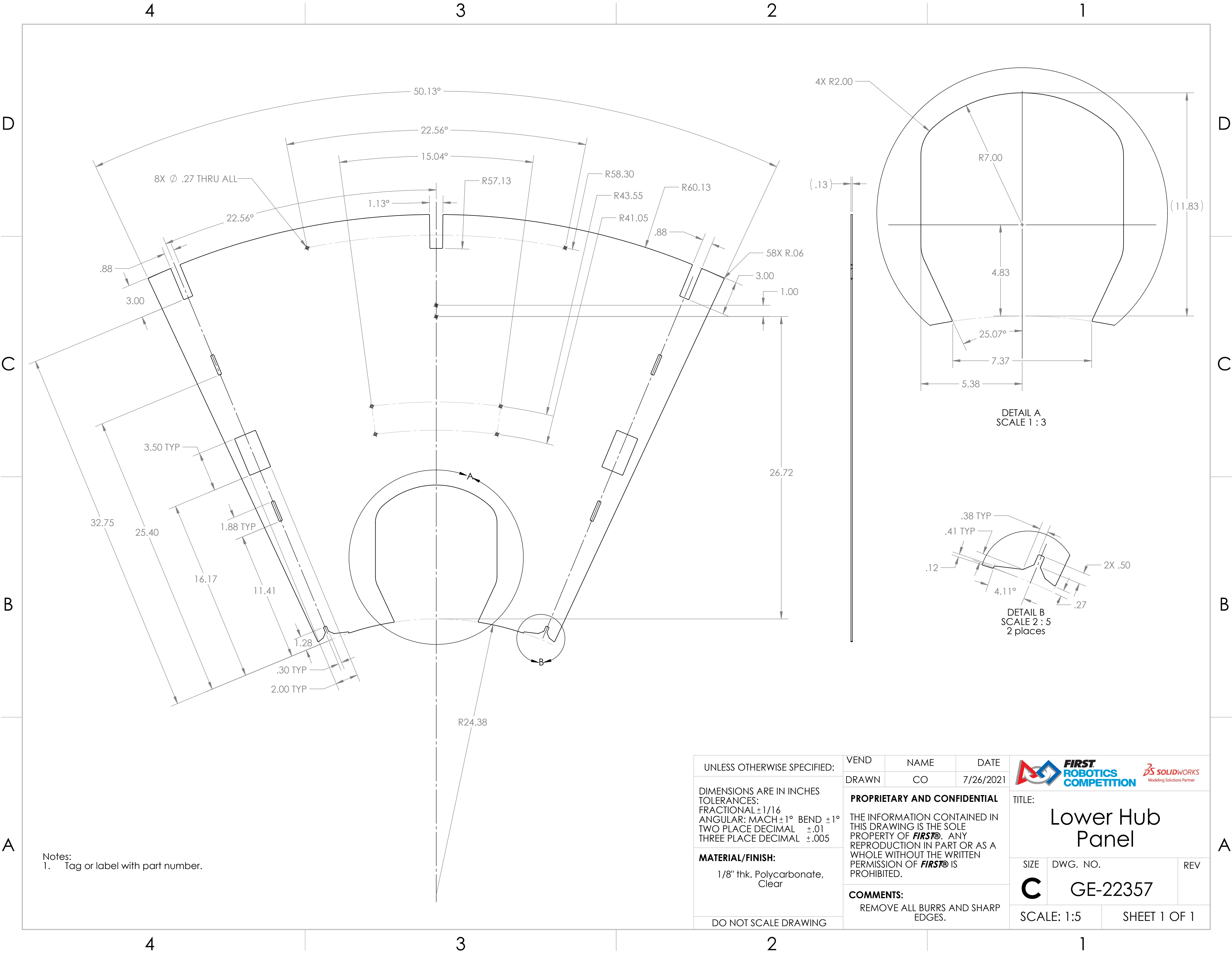
Bottom of two assemblies coincident.
DETAIL F
SCALE 2 : 3





Notes:
1. For reference only: designed interface of GE-22356 with mating part.



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div></div> <div>TITLE: Lower Hub Base</div>		
	DRAWN	CO	7/22/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$	PROPRIETARY AND CONFIDENTIAL			SIZE C		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.		REV
Powder Coat Black				GE-22356		
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 3 OF 3



Notes:
1. Tag or label with part number.

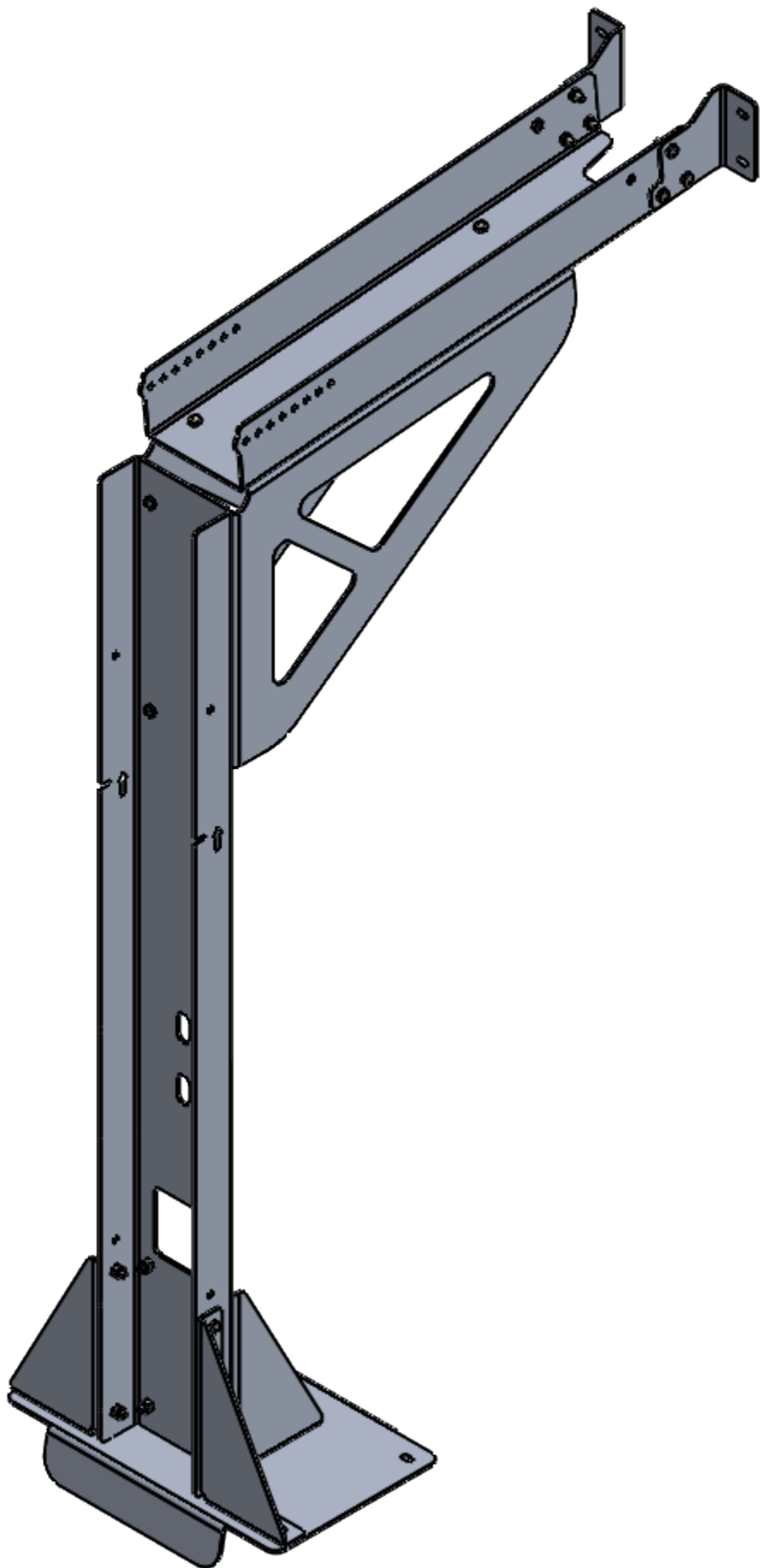
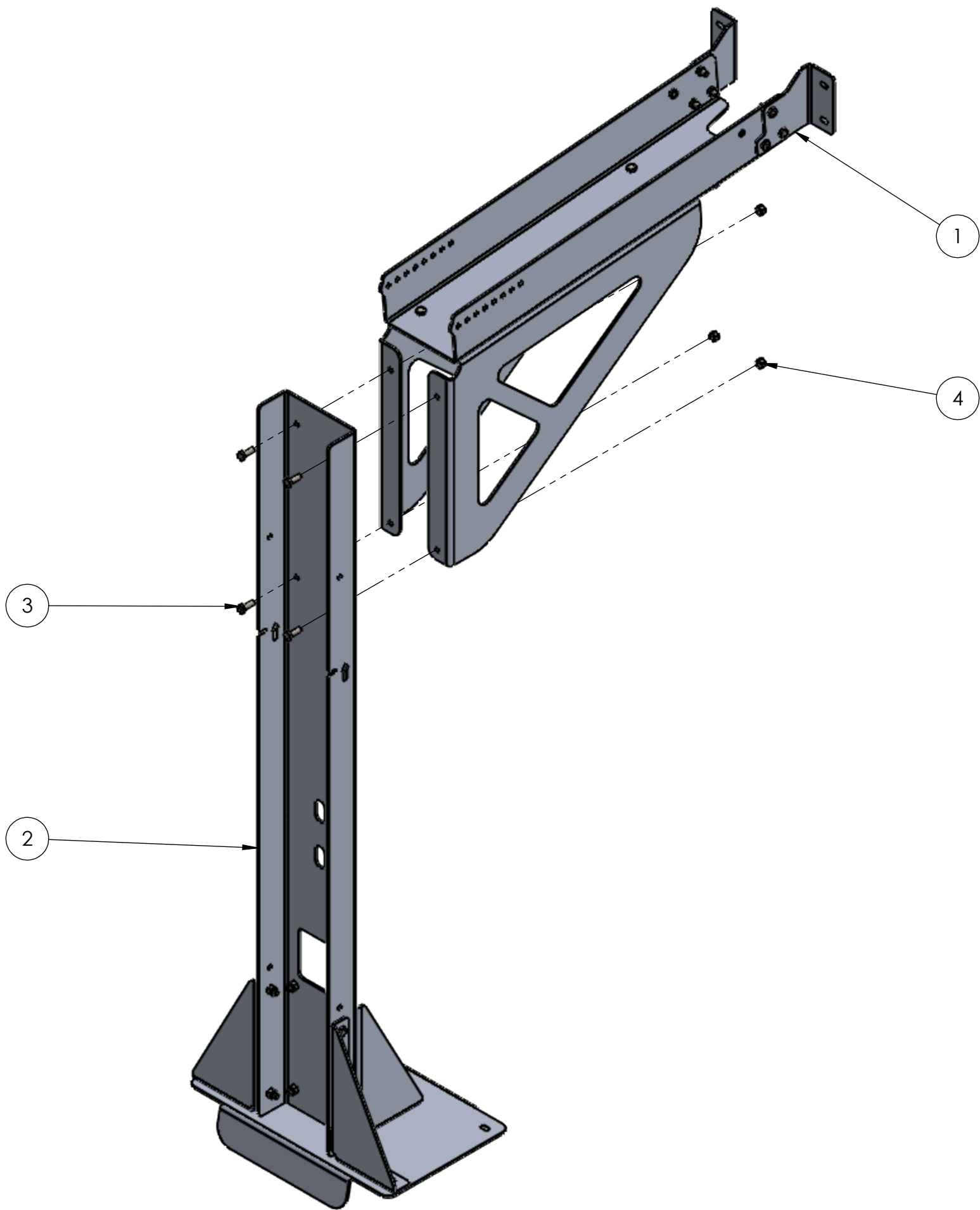
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE:</div> <div>Lower Hub Panel</div>	
	DRAWN	CO	7/26/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH: 1/8" thk. Polycarbonate, Clear	COMMENTS:			DWG. NO.	
	REMOVE ALL BURRS AND SHARP EDGES.			REV	
DO NOT SCALE DRAWING				C	GE-22357
				SCALE: 1:5	
			SHEET 1 OF 1		

4

3

2

1



Notes:
1. Attach (2) to (1) using (4) and (3) .

ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-22382	Upright Top	1
2	GE-22383	Upright Bottom	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

KAMC

7/6/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE:

Hub Leg
Assembly

SIZE

DWG. NO.

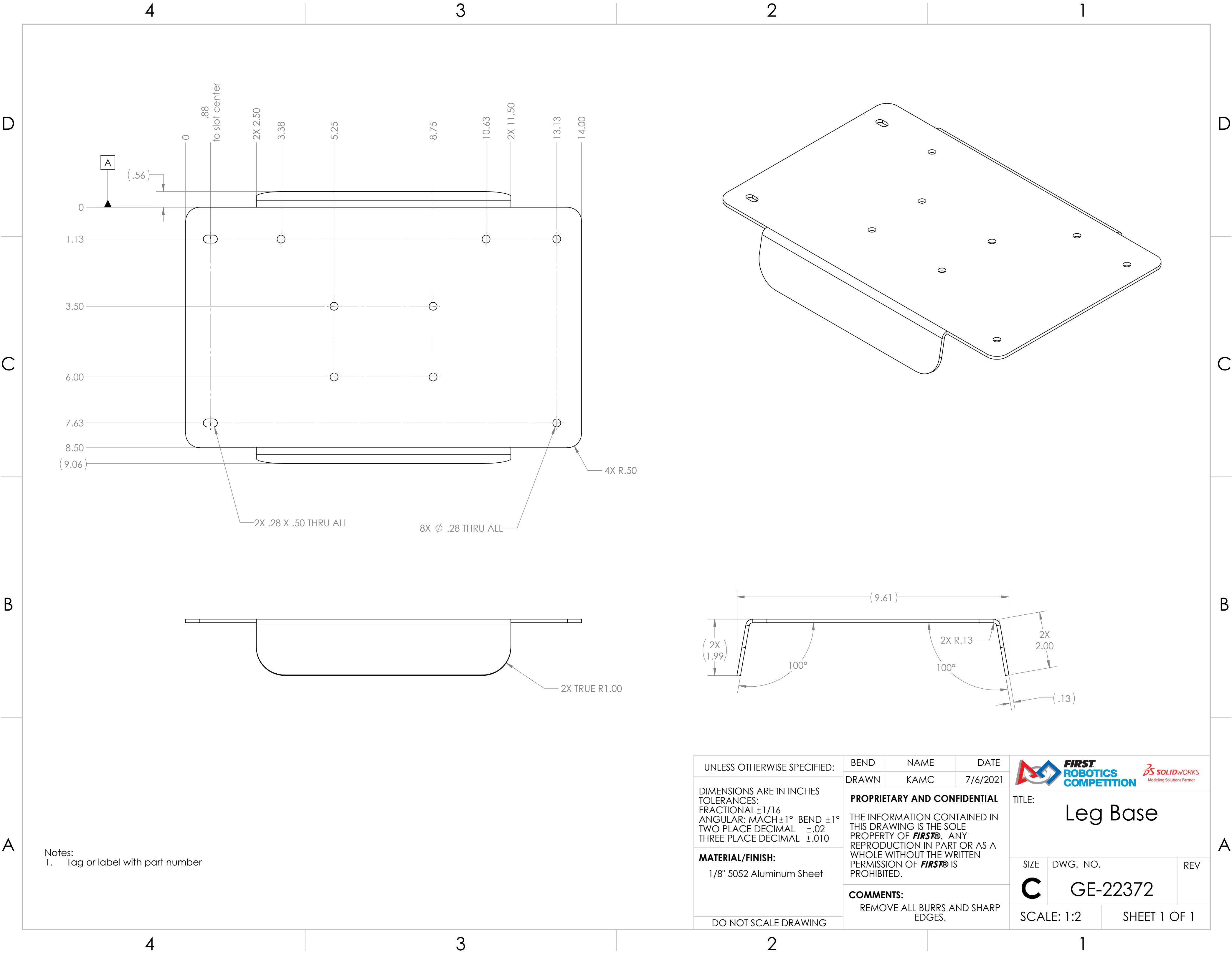
REV



C

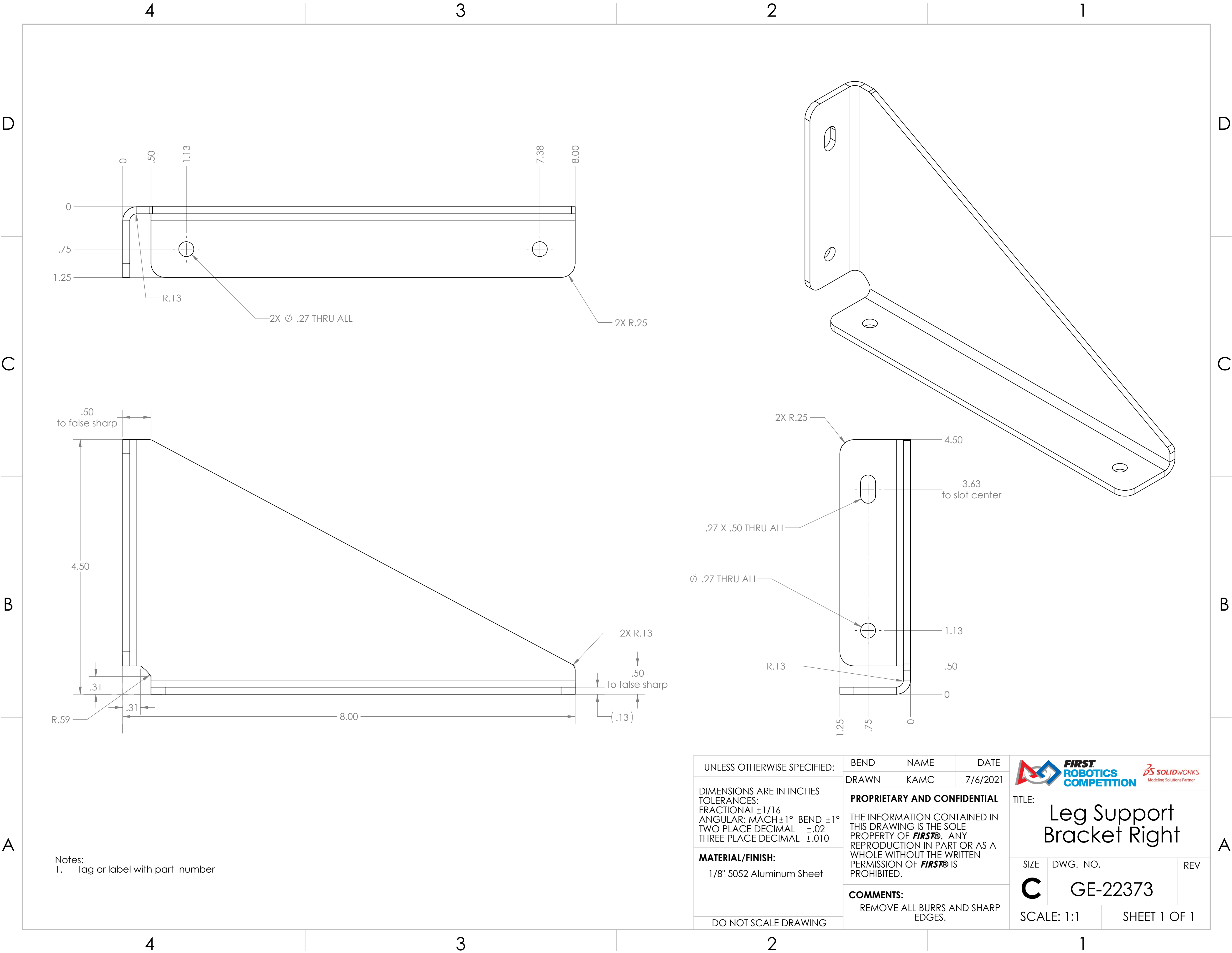
GE-22371

SCALE: 1:6

SHEET 1 OF 1





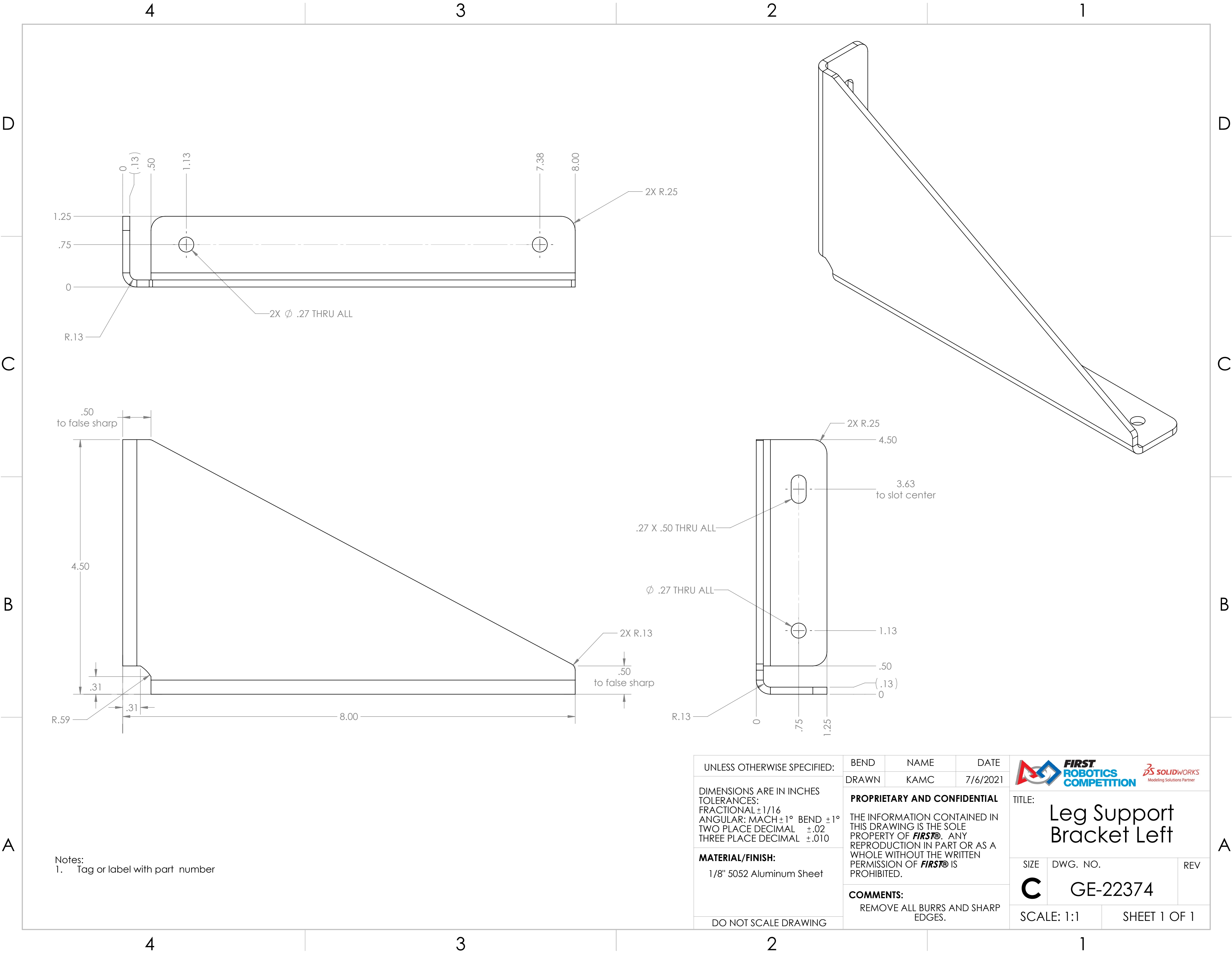
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <h1>Leg Base</h1></div>		
	DRAWN	KAMC	7/6/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22372	
				SCALE: 1:2		SHEET 1 OF 1



Notes:
1. Tag or label with part number



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND DRAWN	NAME KAMC	DATE 7/6/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Leg Support Bracket Right		
SIZE C	DWG. NO. GE-22373	REV
SCALE: 1:1		SHEET 1 OF 1



Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	KAMC	7/6/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Leg Support Bracket Left		
SIZE C	DWG. NO. GE-22374	REV
SCALE: 1:1		SHEET 1 OF 1

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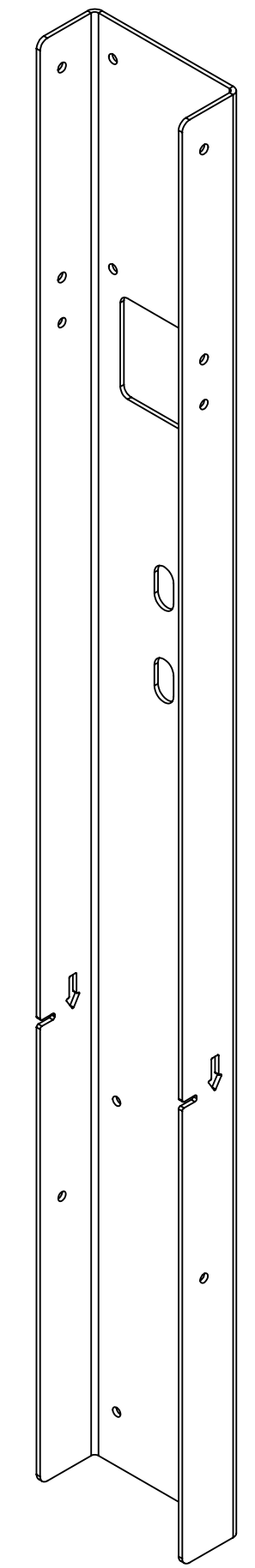
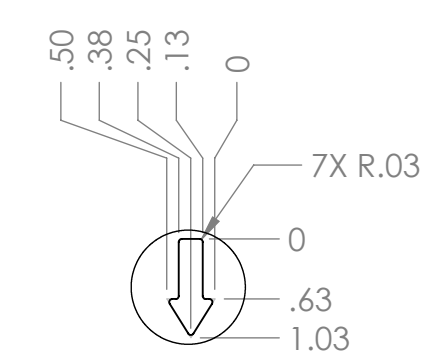
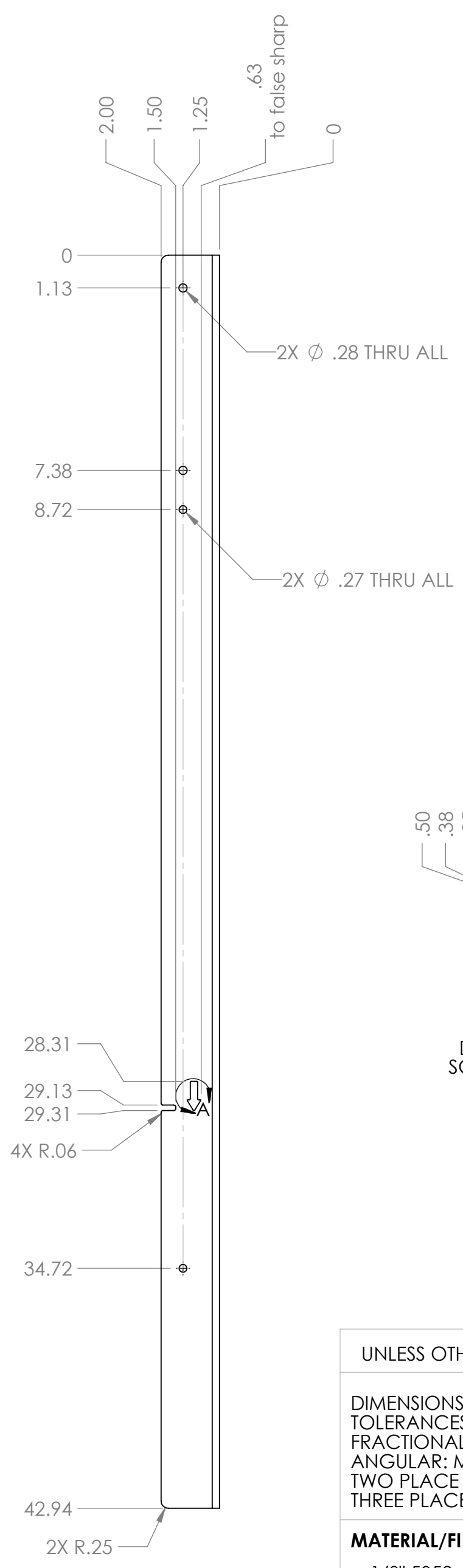
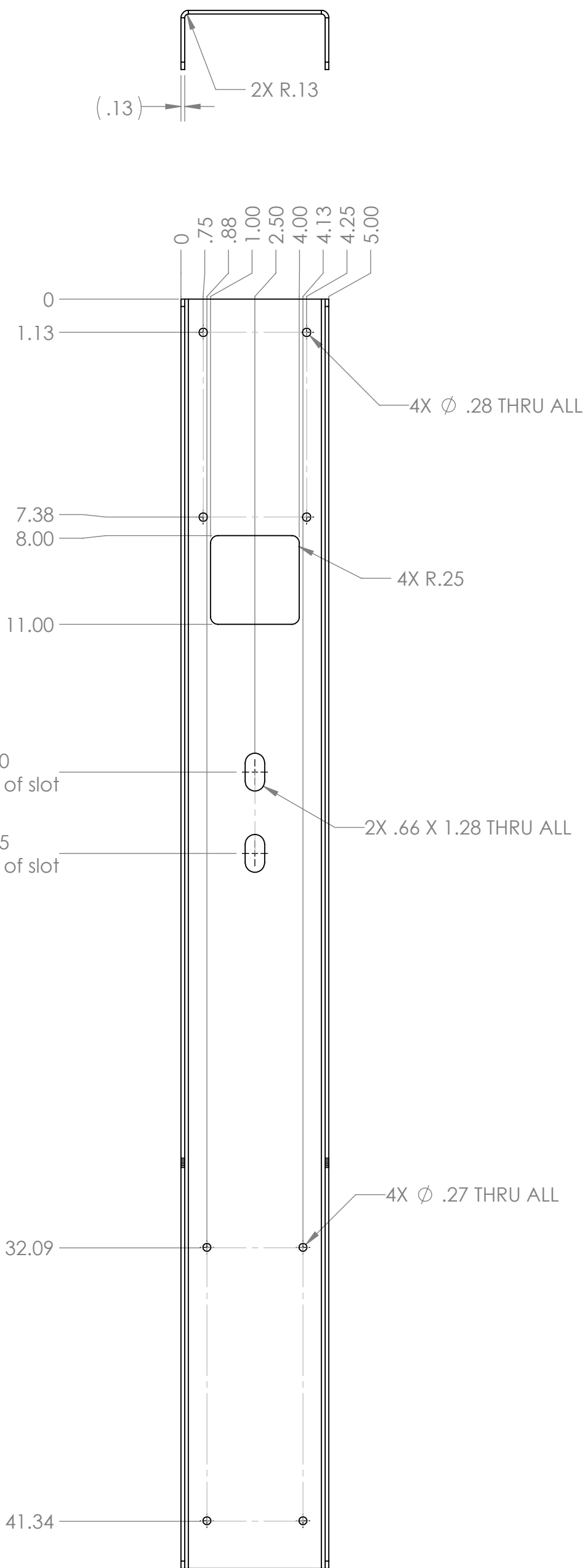
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST ® IS PROHIBITED.			TITLE: Leg Vertical Channel		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22375	
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1

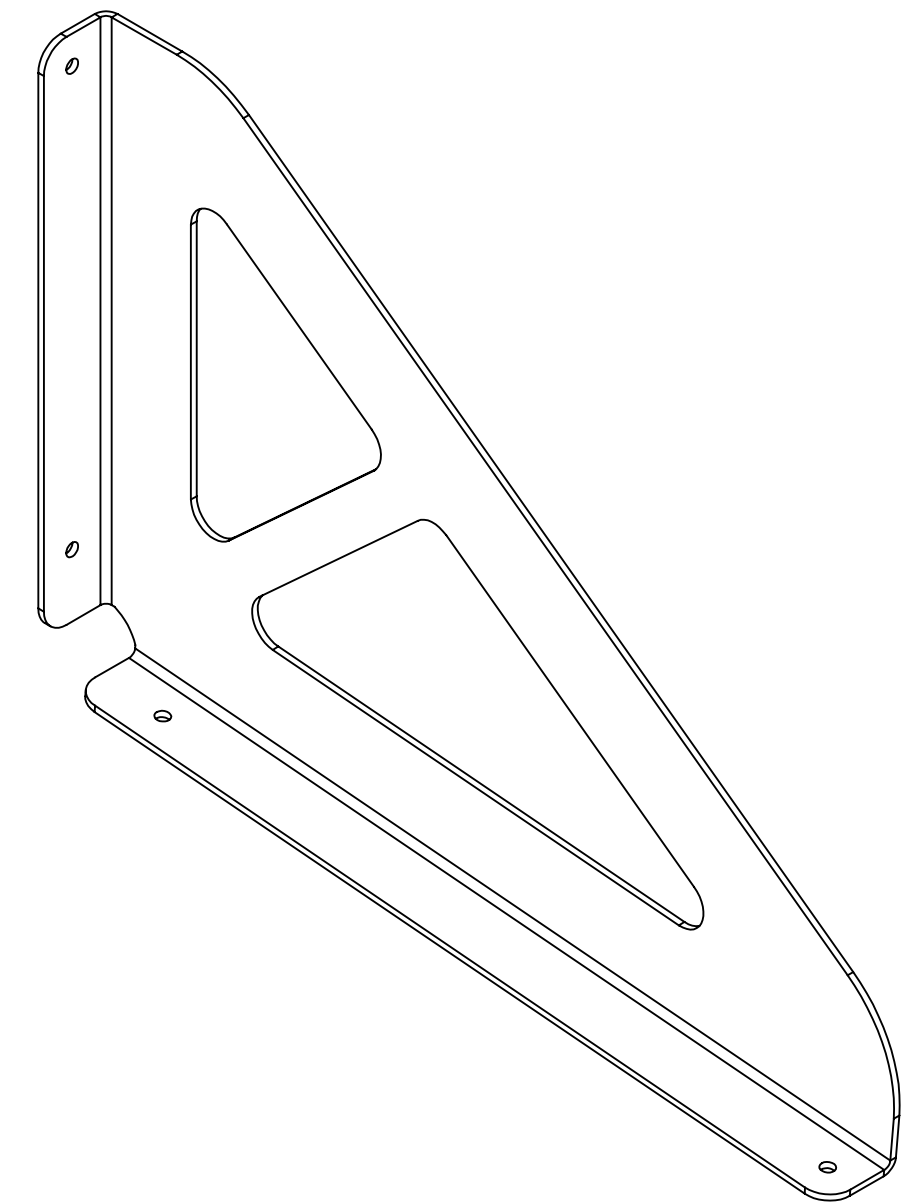
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VIEW A-A

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: <div>Leg to Upper Exit Gusset Right</div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22377
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 1

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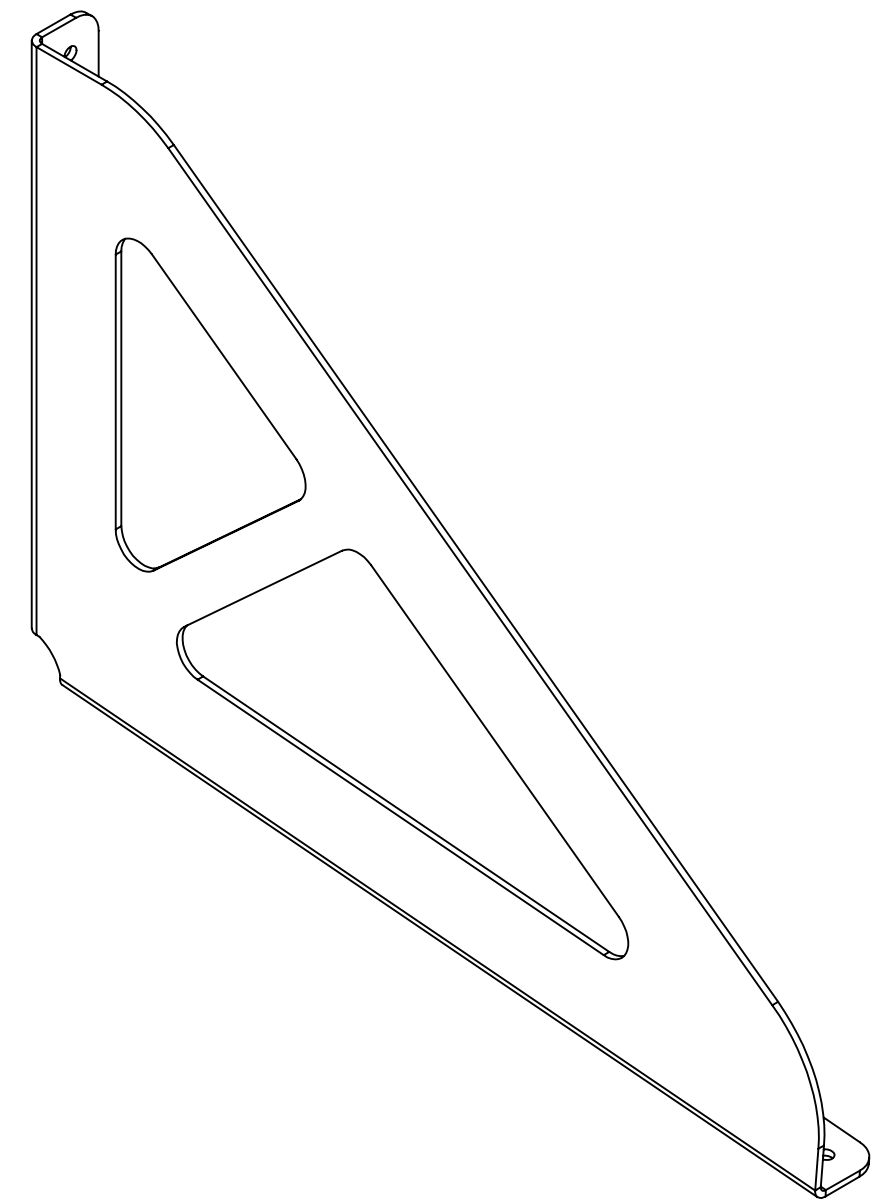
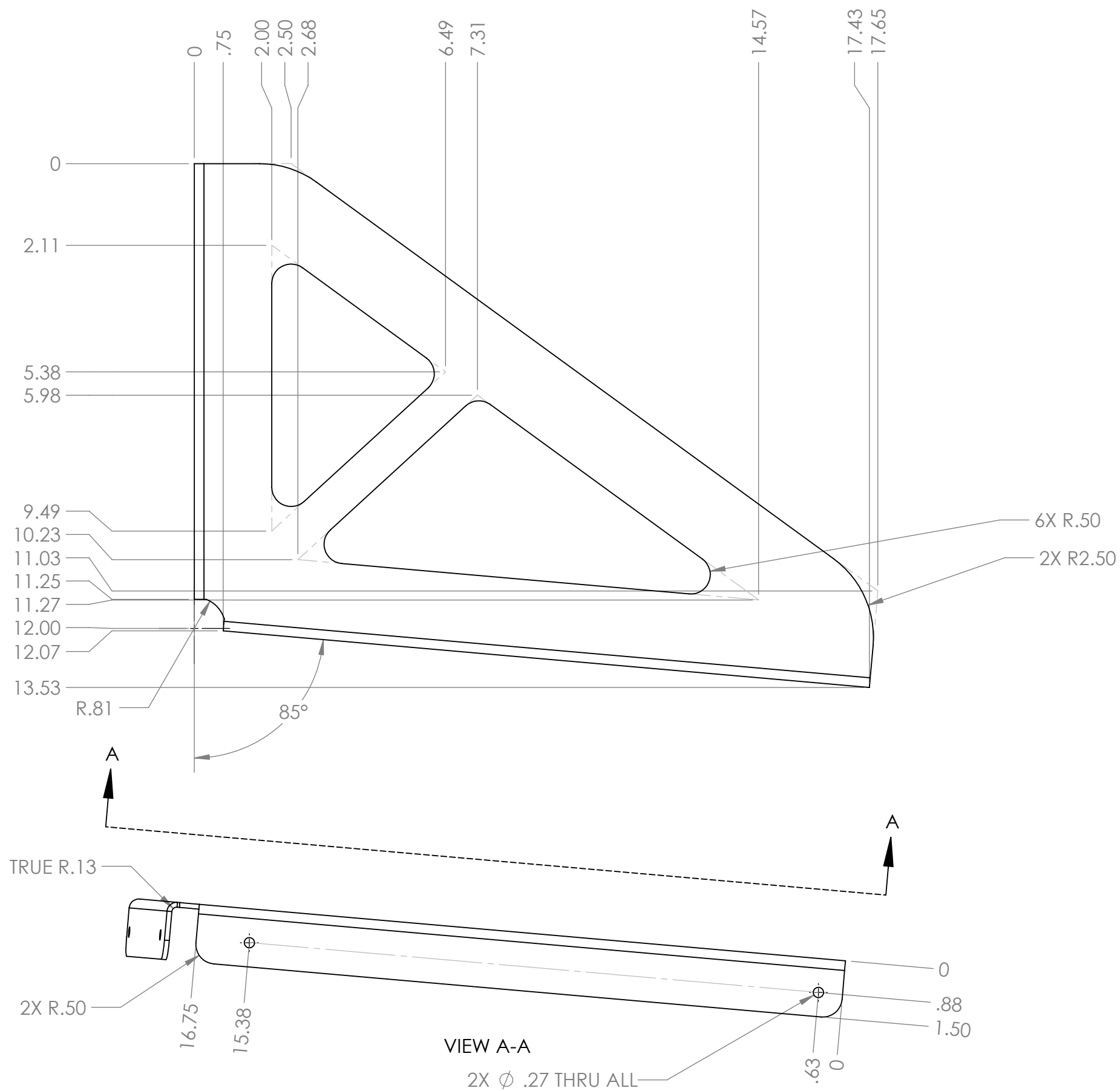
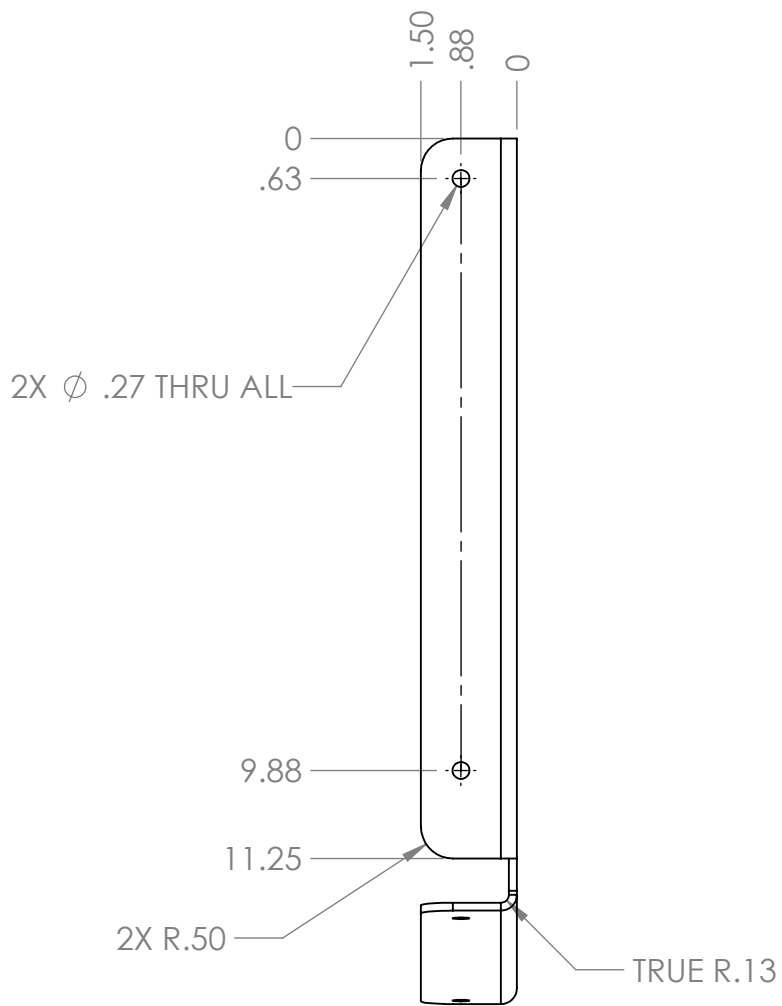
C

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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>	
	DRAWN	KAMC	7/6/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	PROPRIETARY AND CONFIDENTIAL			TITLE: Leg to Upper Exit Gusset Left	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST ® IS PROHIBITED.				
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING				C	GE-22378
				SCALE: 1:3	

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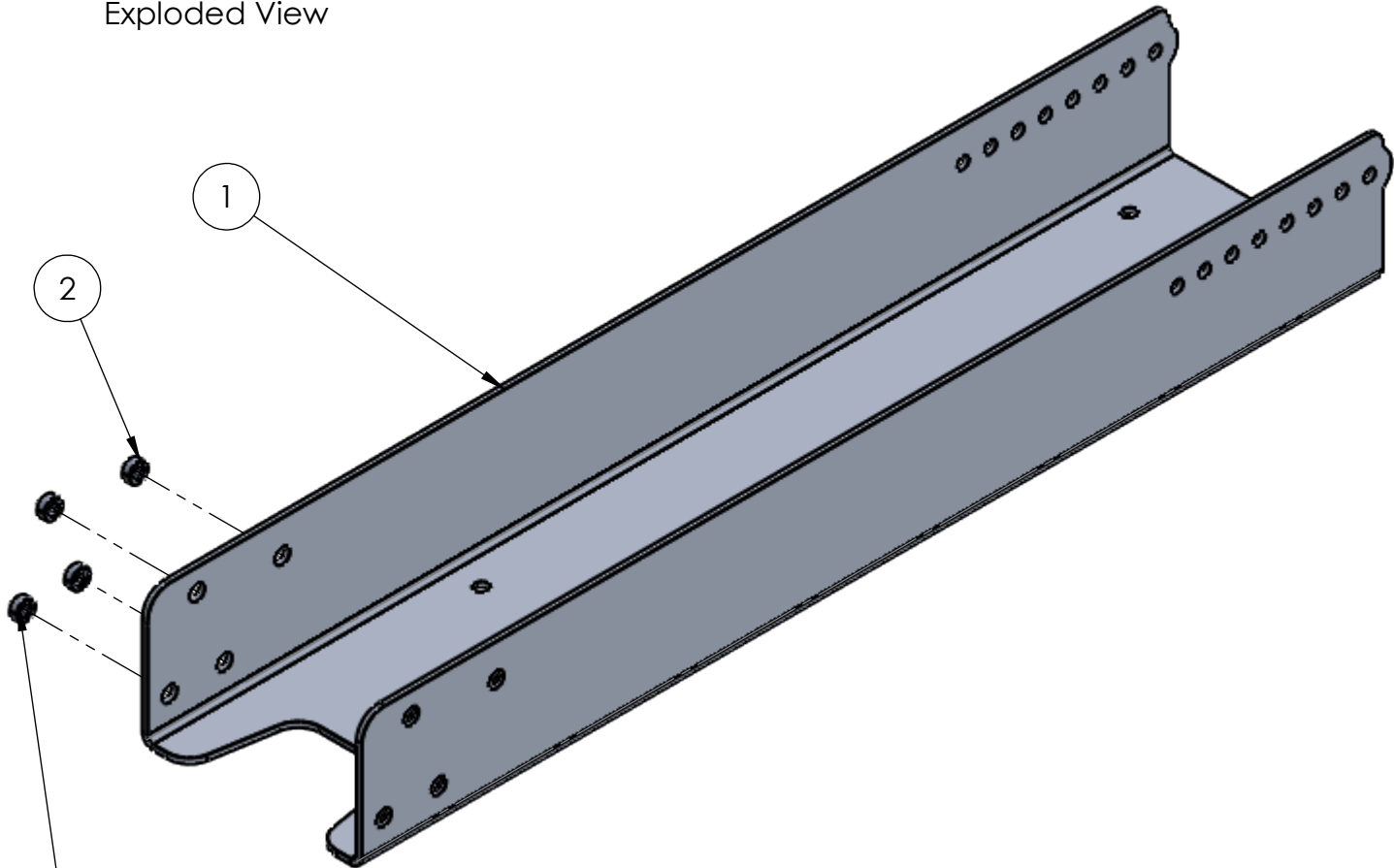
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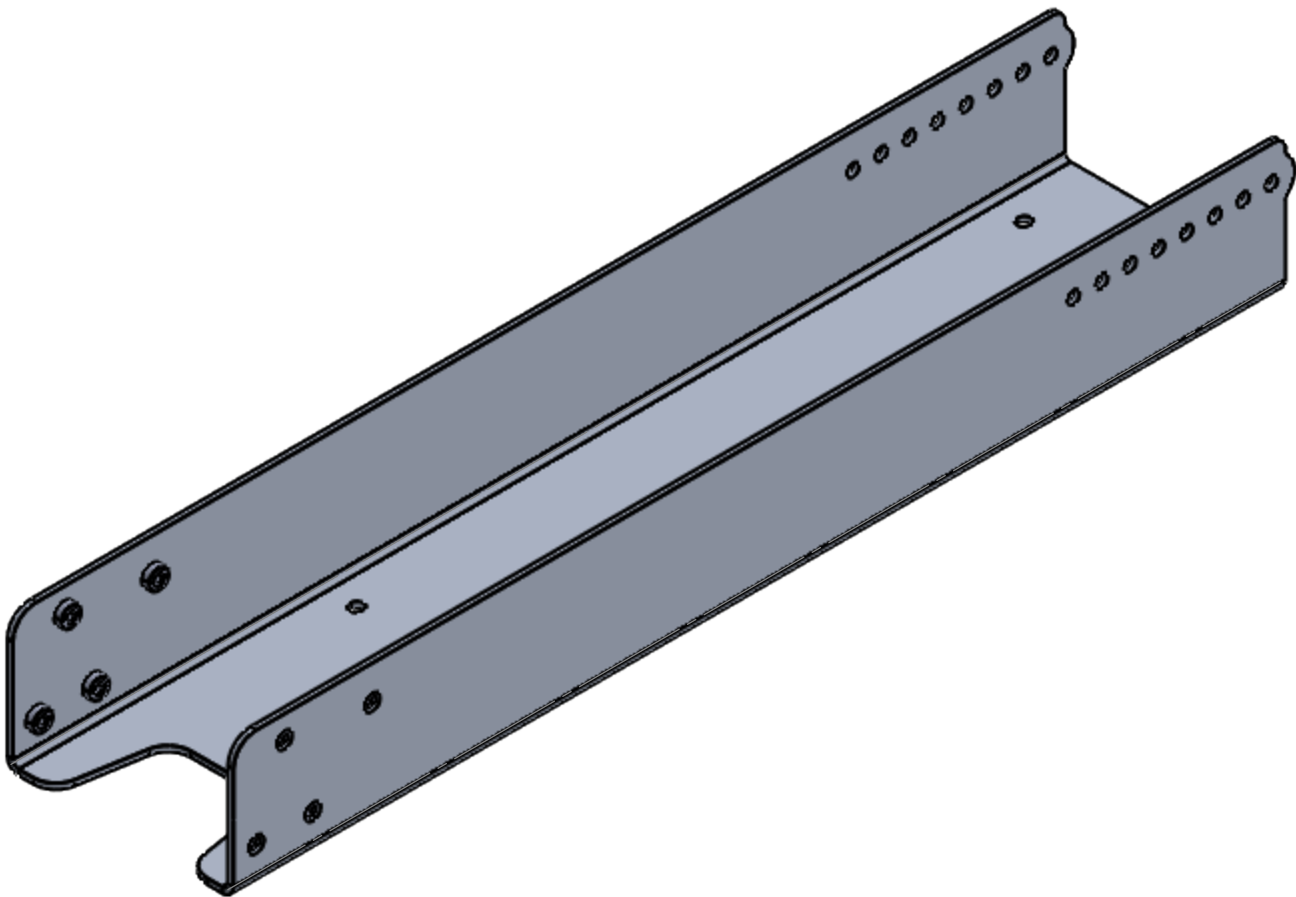
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Exploded View

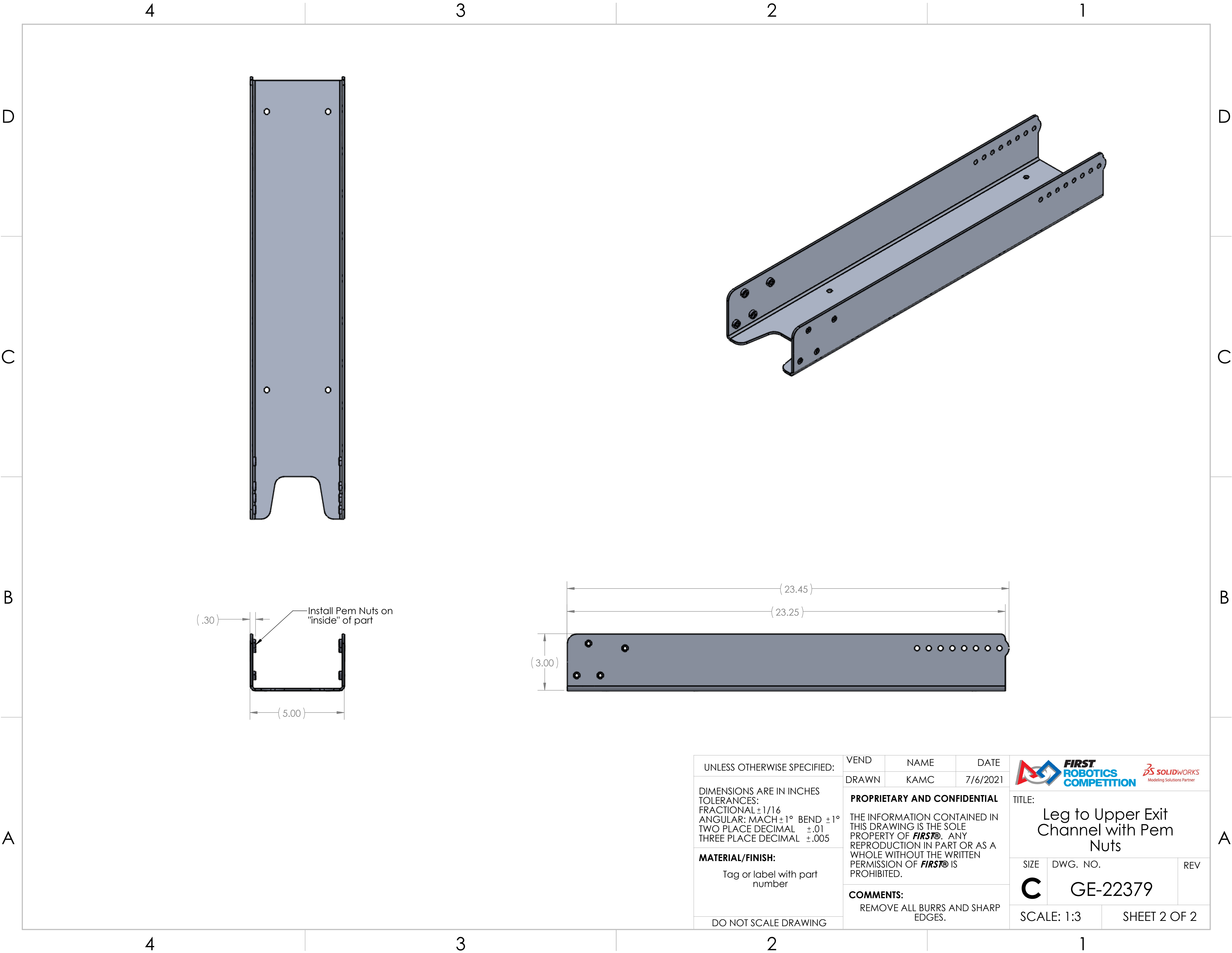


Note: 2 installed on "inside" of part



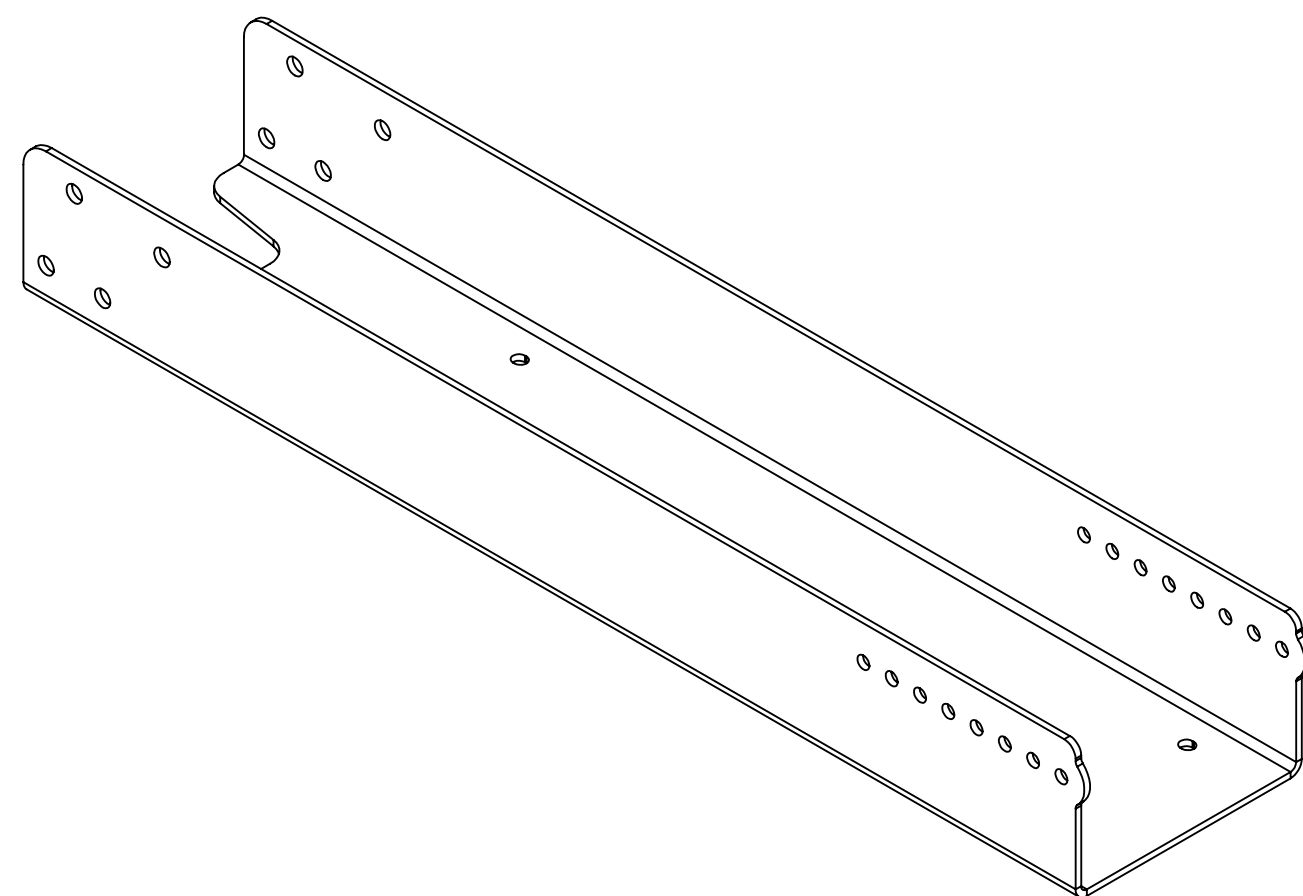
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22379-01	Leg to Upper Exit Channel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: Leg to Upper Exit Channel with Pem Nuts</div></div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			<div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.</div>		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH: Tag or label with part number				SIZE	DWG. NO.	REV
				C	GE-22379	
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 2

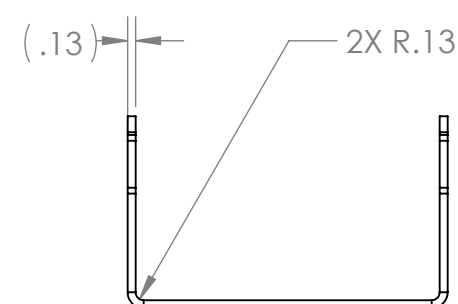


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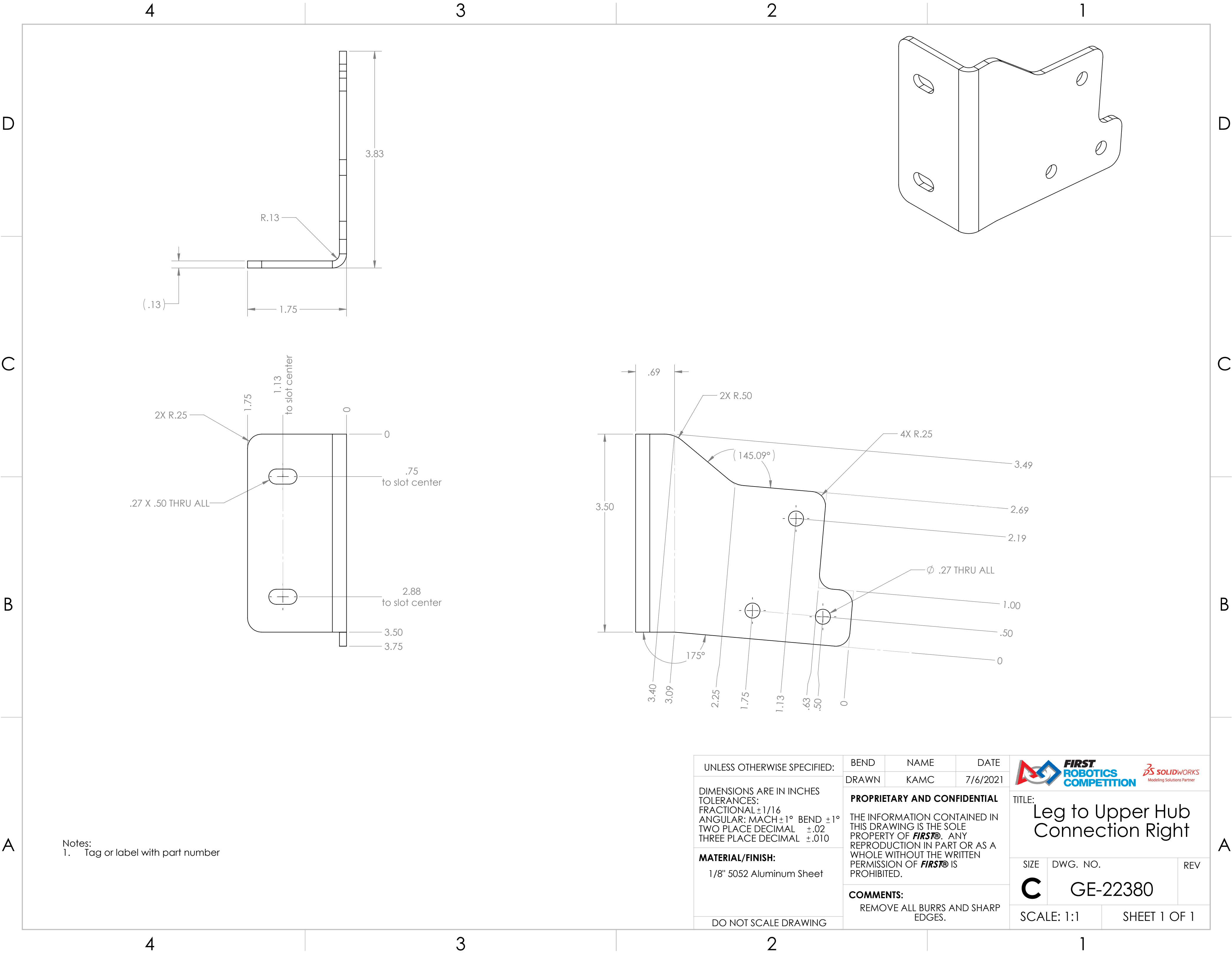
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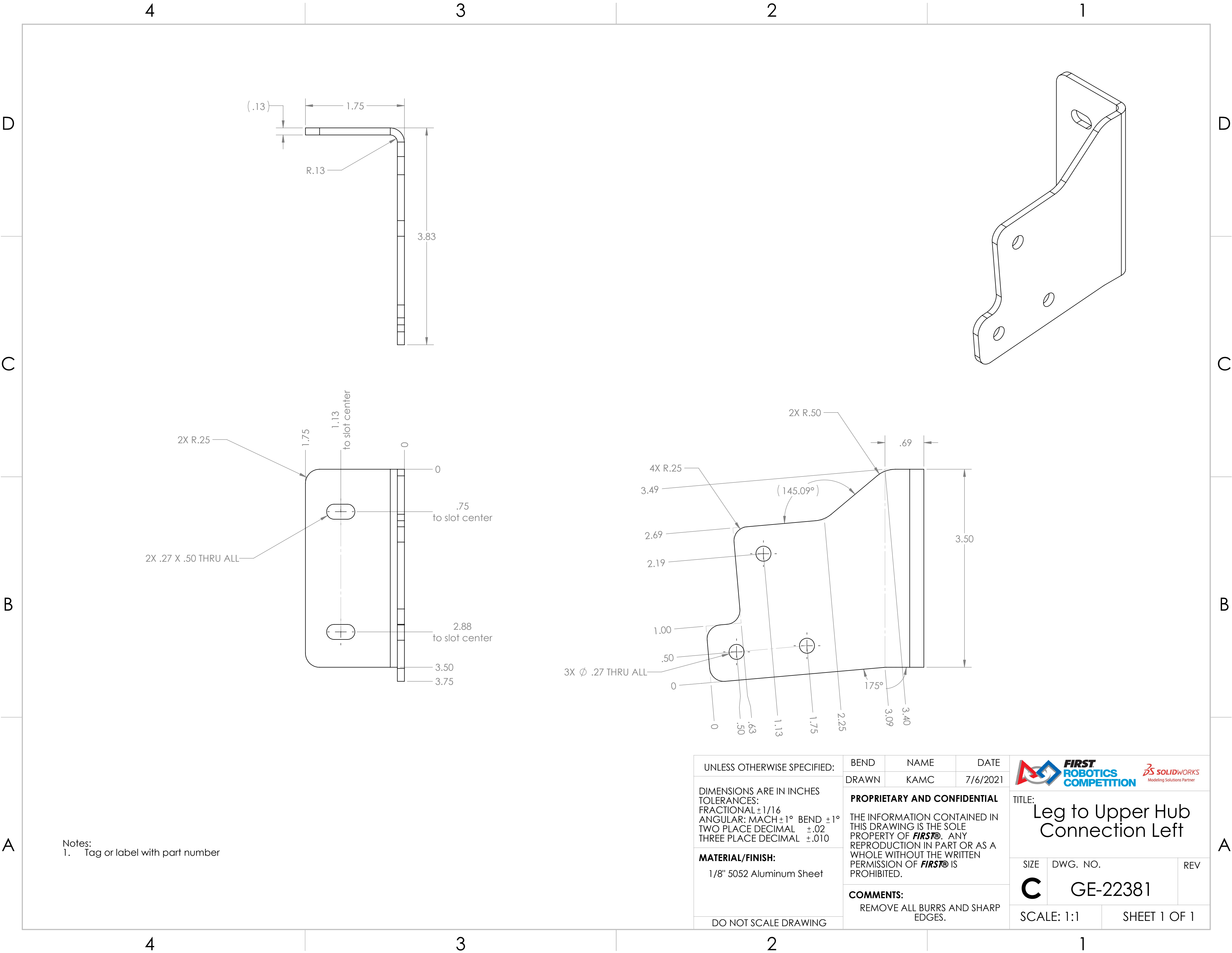
UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	 		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$		DRAWN	KAMC	7/6/2021	TITLE: <div>Leg to Upper Exit Channel</div>		
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet					SIZE C	DWG. NO. GE-22379-01	REV
DO NOT SCALE DRAWING					SCALE: 1:3		SHEET 1 OF 1



Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	KAMC	7/6/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Leg to Upper Hub Connection Right		
SIZE C	DWG. NO. GE-22380	REV
SCALE: 1:1		SHEET 1 OF 1



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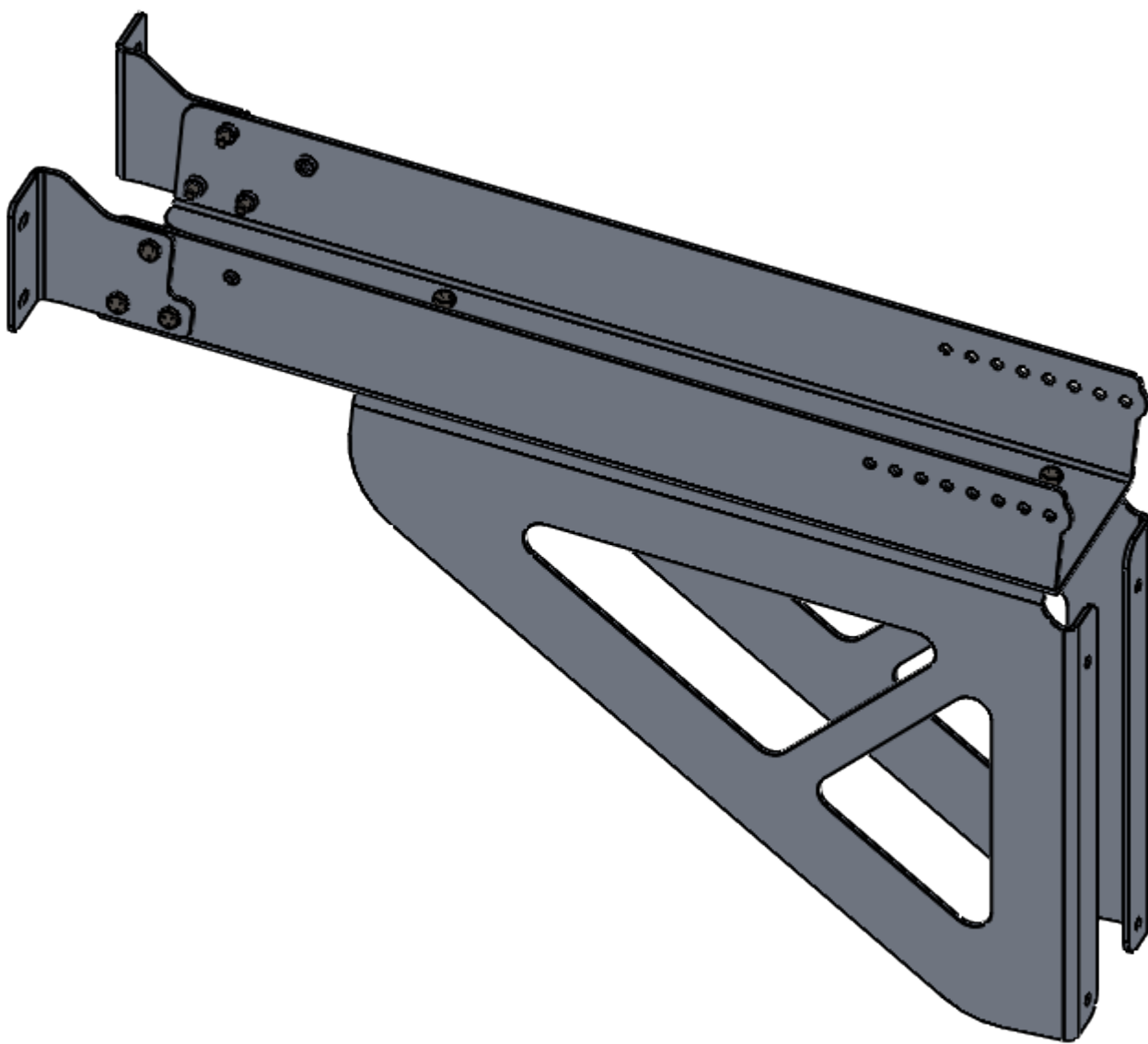
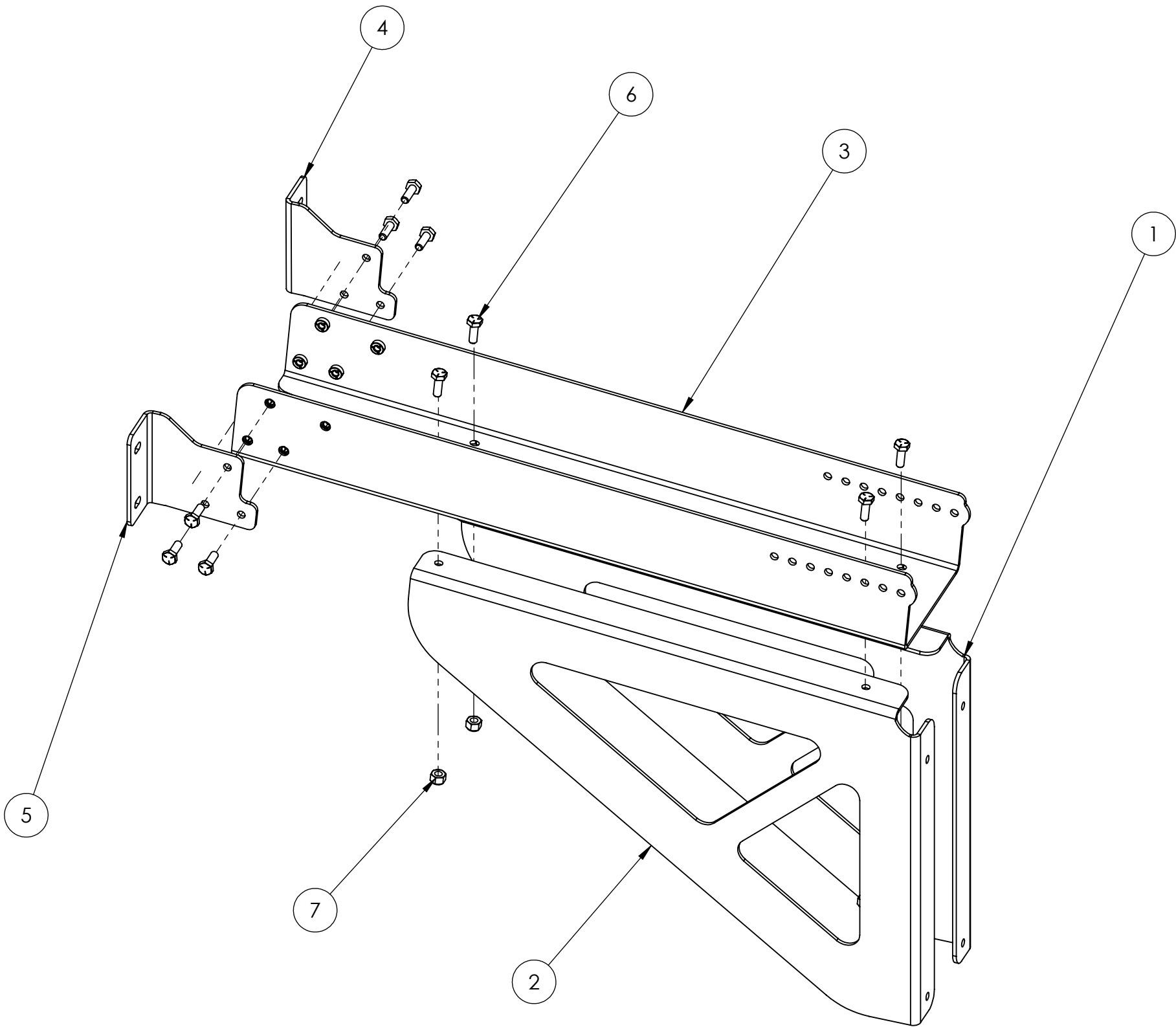
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- Notes:
- 1. Attach 1 and 2 to 3 using 6 and 7 .
 - 2. Attach 4 and 5 to 3 using 6 .

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22377	Leg to Upper Exit Gusset Right	1
2	GE-22378	Leg to Upper Exit Gusset Left	1
3	GE-22379	Leg to Upper Exit Channel with Pem Nuts	1
4	GE-22380	Leg to Upper Hub Connection Right	1
5	GE-22381	Leg to Upper Hub Connection Left	1
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	10
7	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	CO	12/29/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Upright Top		
SIZE C	DWG. NO. GE-22382	REV
SCALE: 1:4		SHEET 1 OF 1

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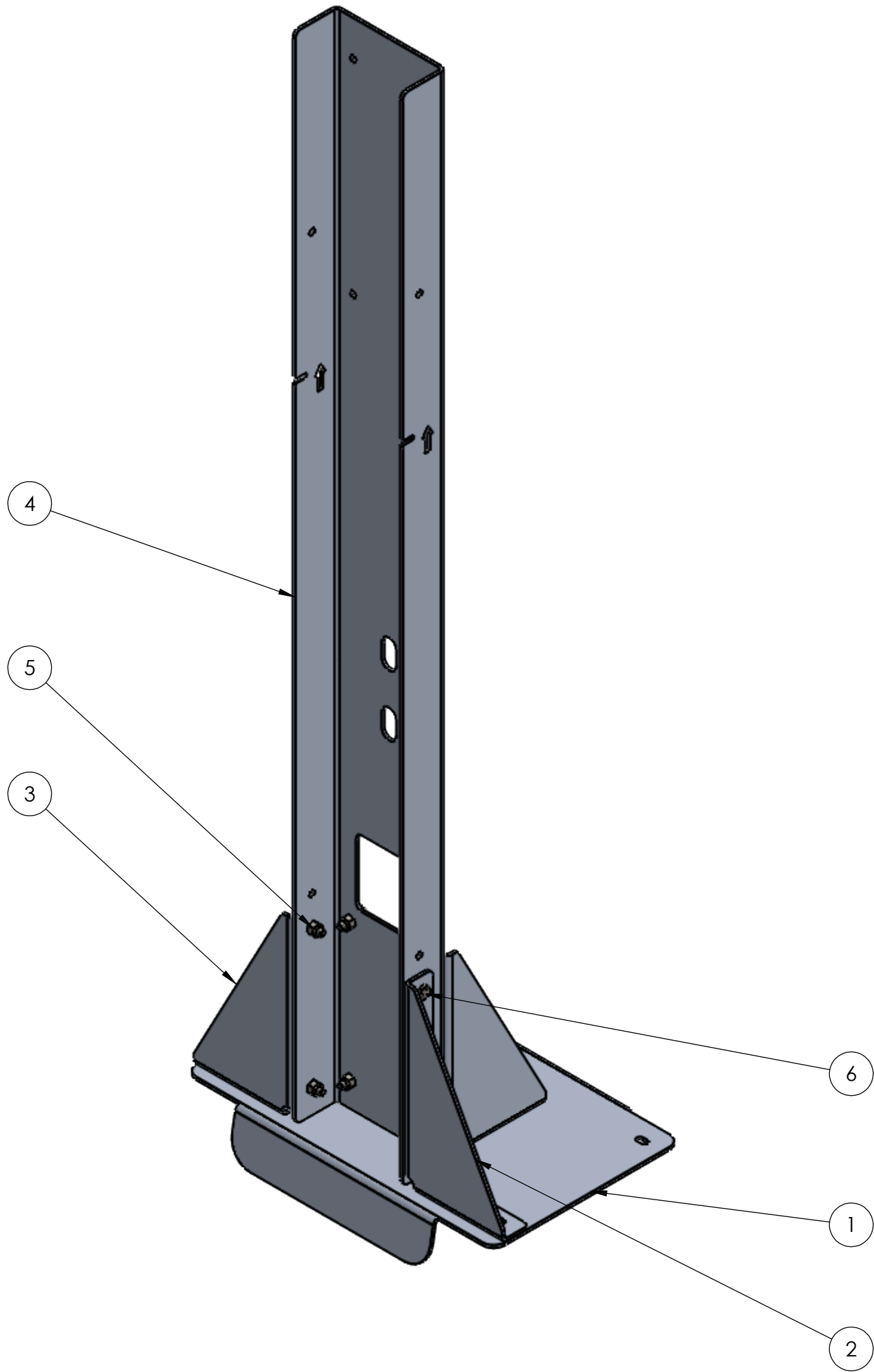
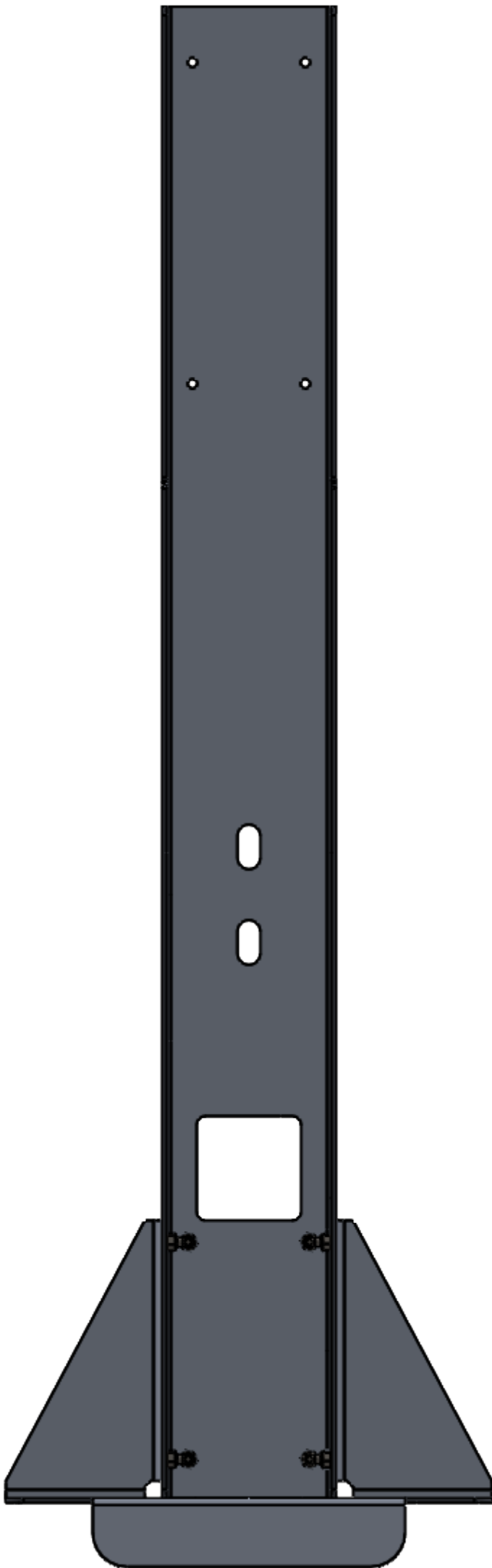
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22372	Leg Base	1
2	GE-22373	Leg Support Bracket Right	2
3	GE-22374	Leg Support Bracket Left	2
4	GE-22375	Leg Vertical Channel	1
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	14
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	14



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

12/29/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



Modeling Solutions Partner

TITLE:

Upright Bottom

SIZE

C

DWG. NO.

GE-22383

REV

SCALE: 1:4

SHEET 1 OF 2

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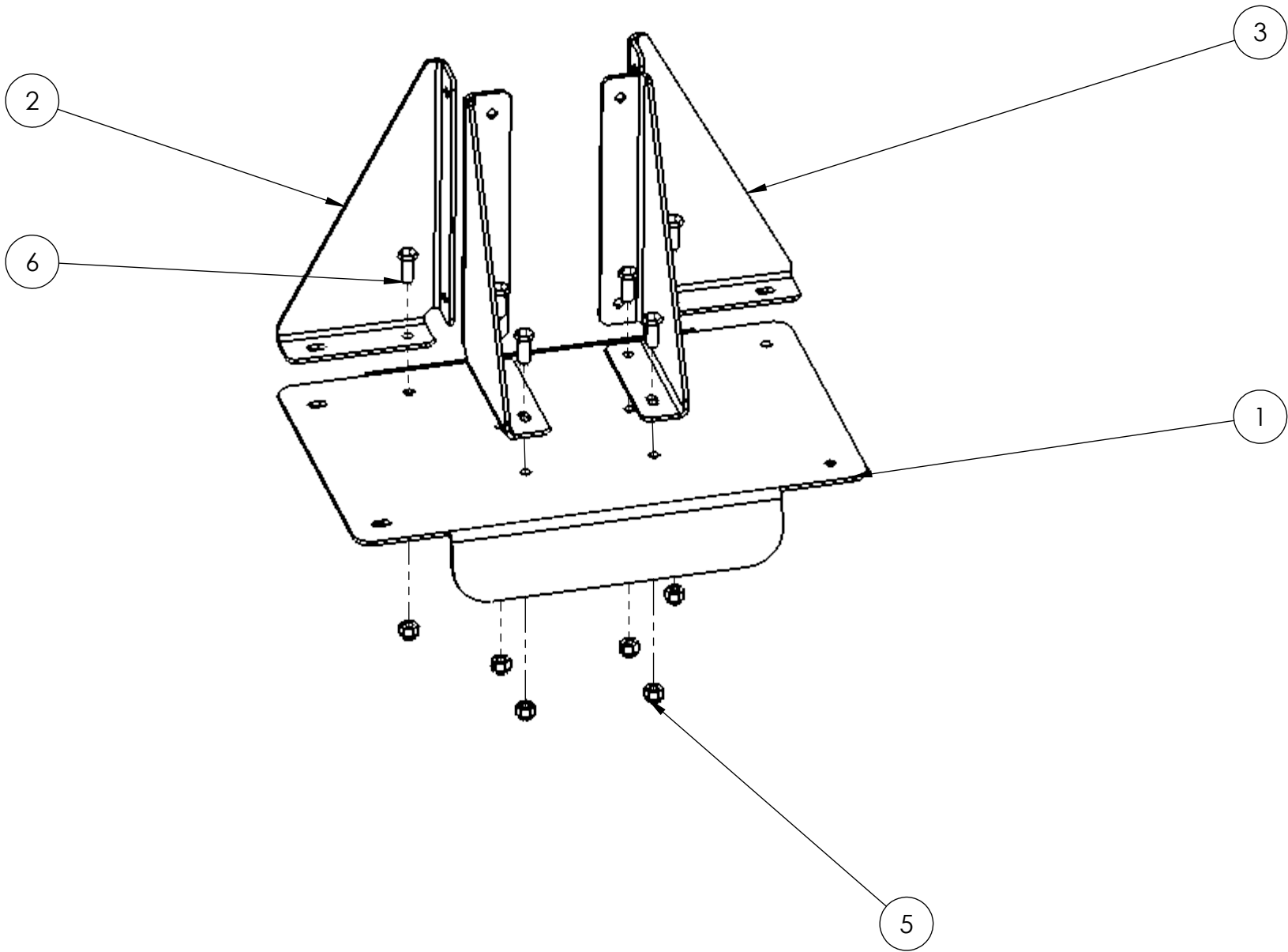
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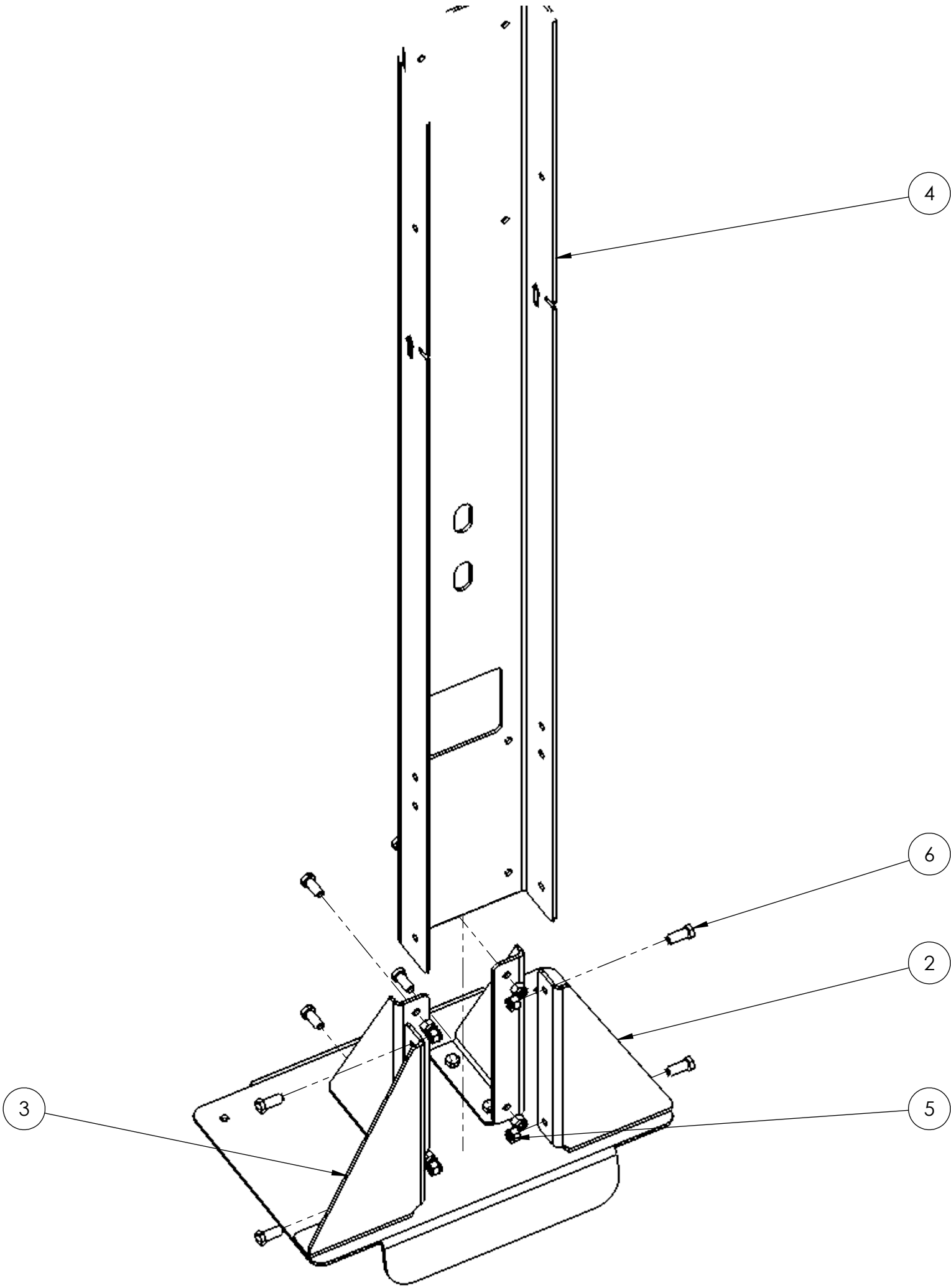
2

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Notes:

1. Attach 2 and 3 to 1 using 6 and 5 .



Notes:

1. Attach 4 to assembly using 5 and 6 to connect to 2 and 3 as shown.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: Upright Bottom</div></div>	
	DRAWN	CO	12/29/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE C	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:	COMMENTS:			DWG. NO.	
	REMOVE ALL BURRS AND SHARP EDGES.			GE-22383	
DO NOT SCALE DRAWING				SCALE: 1:4	REV SHEET 2 OF 2

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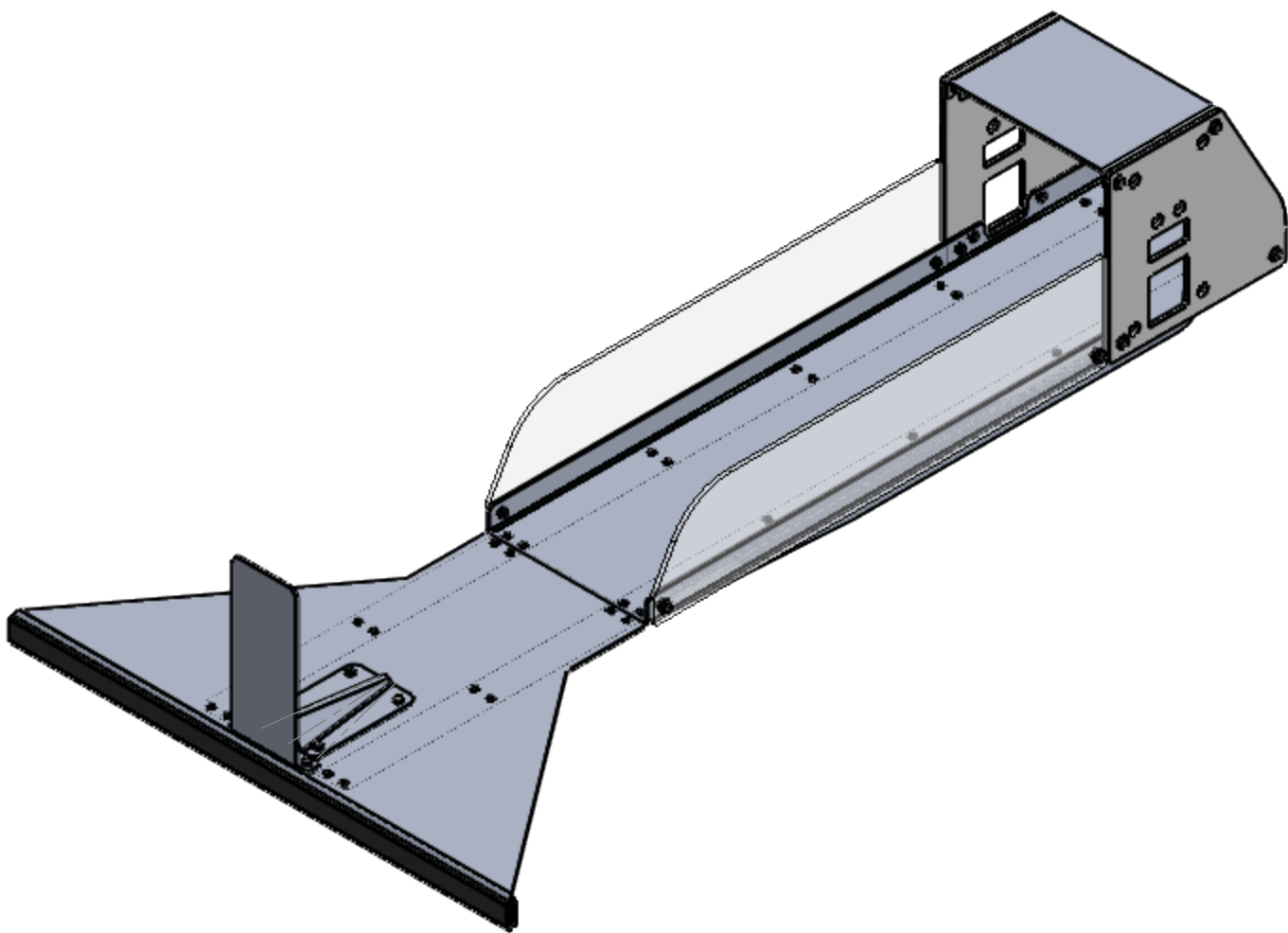
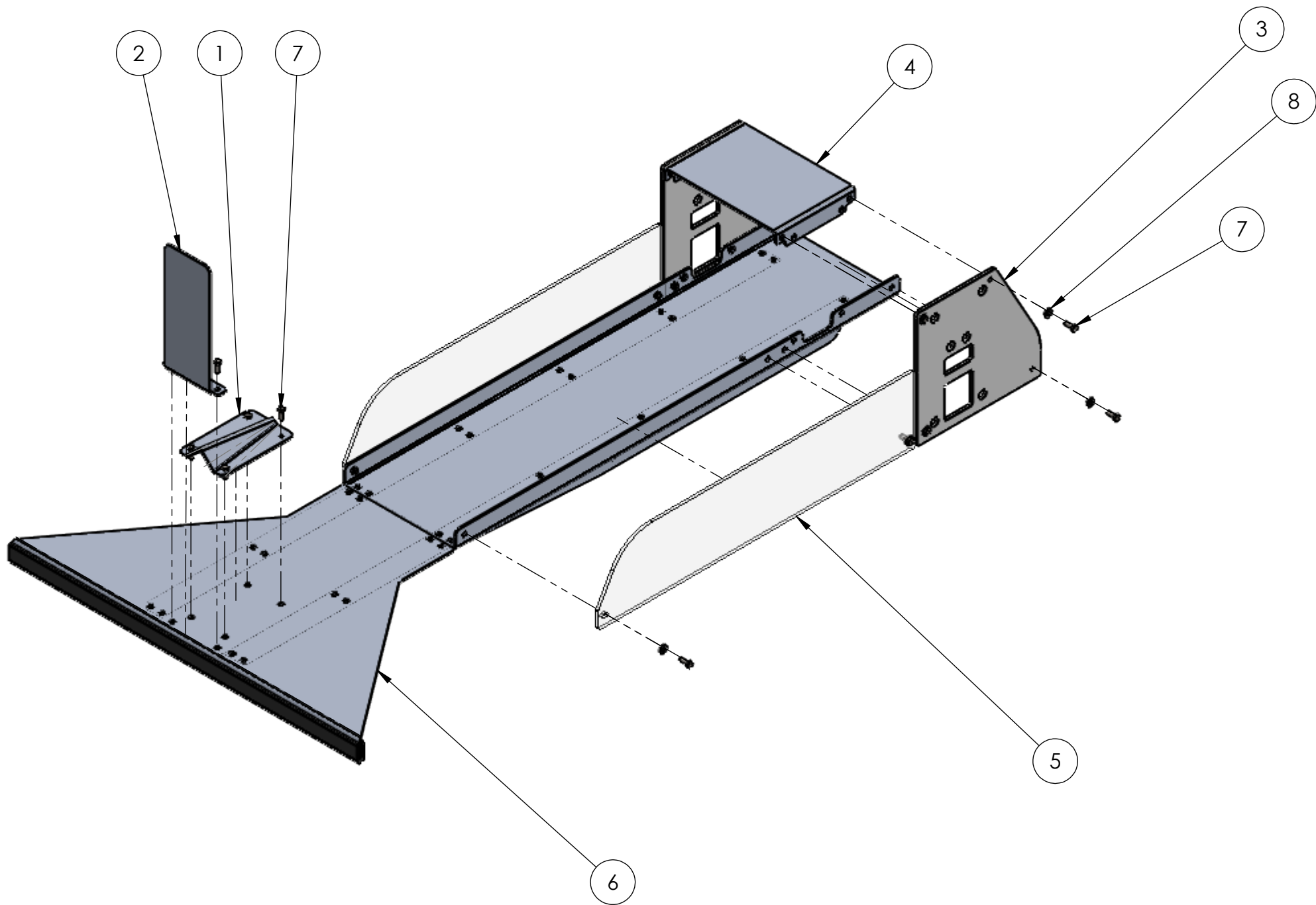
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Exploded View



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ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-22392	Horn	1
2	GE-22393	Horn Bounce Plate	1
3	GE-22398	Upper Exit Sensor Wall	2
4	GE-22399	Upper Exit Top with Pem Nuts	1
5	GE-22400	Upper Exit Side Wall	2
6	GE-22406	Upper Exit Sheet Metal with Foam	1
7	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	18
8	washer_flat_.25	Flat Washer for 1/4" Screw	12

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

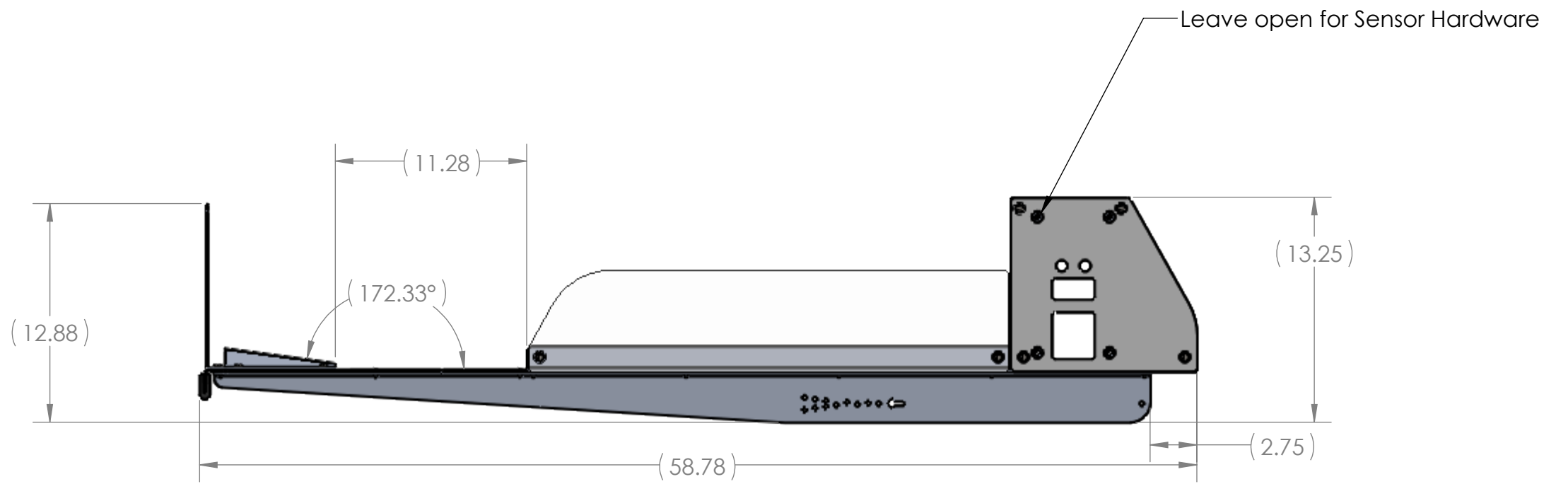
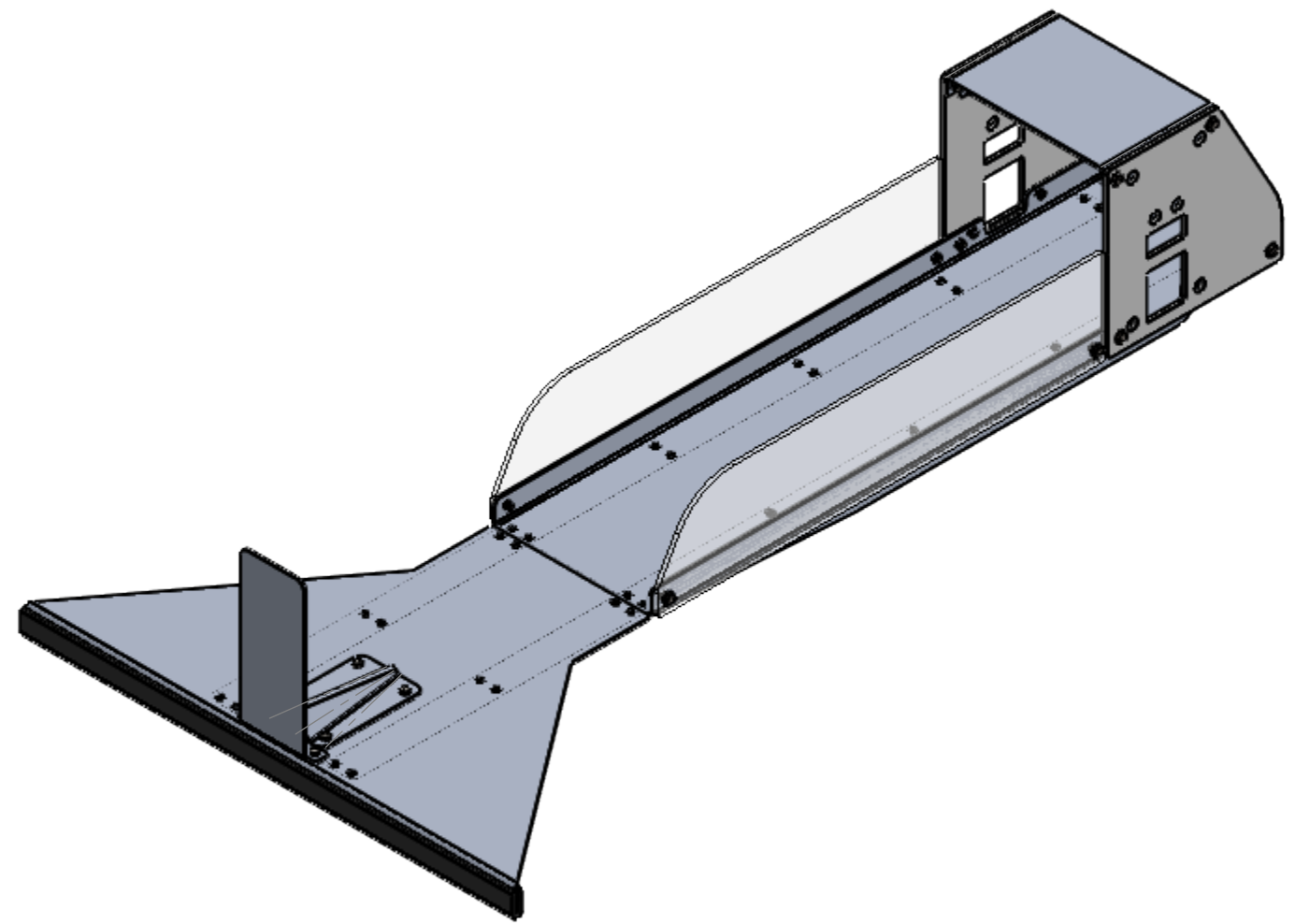
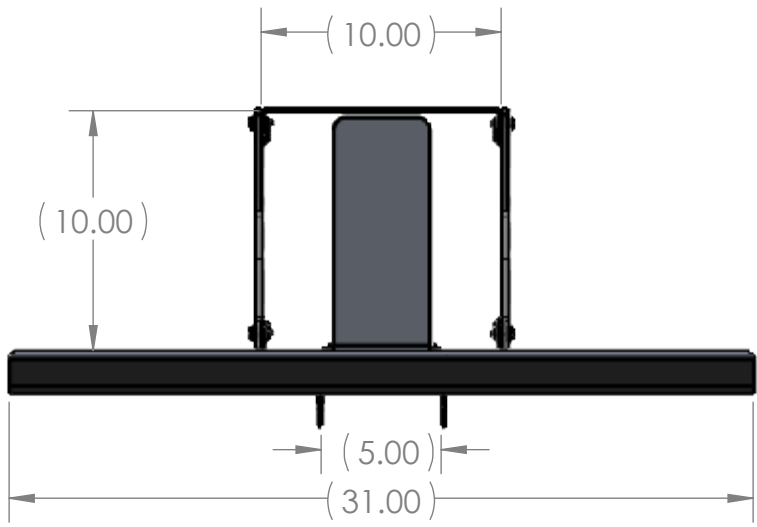
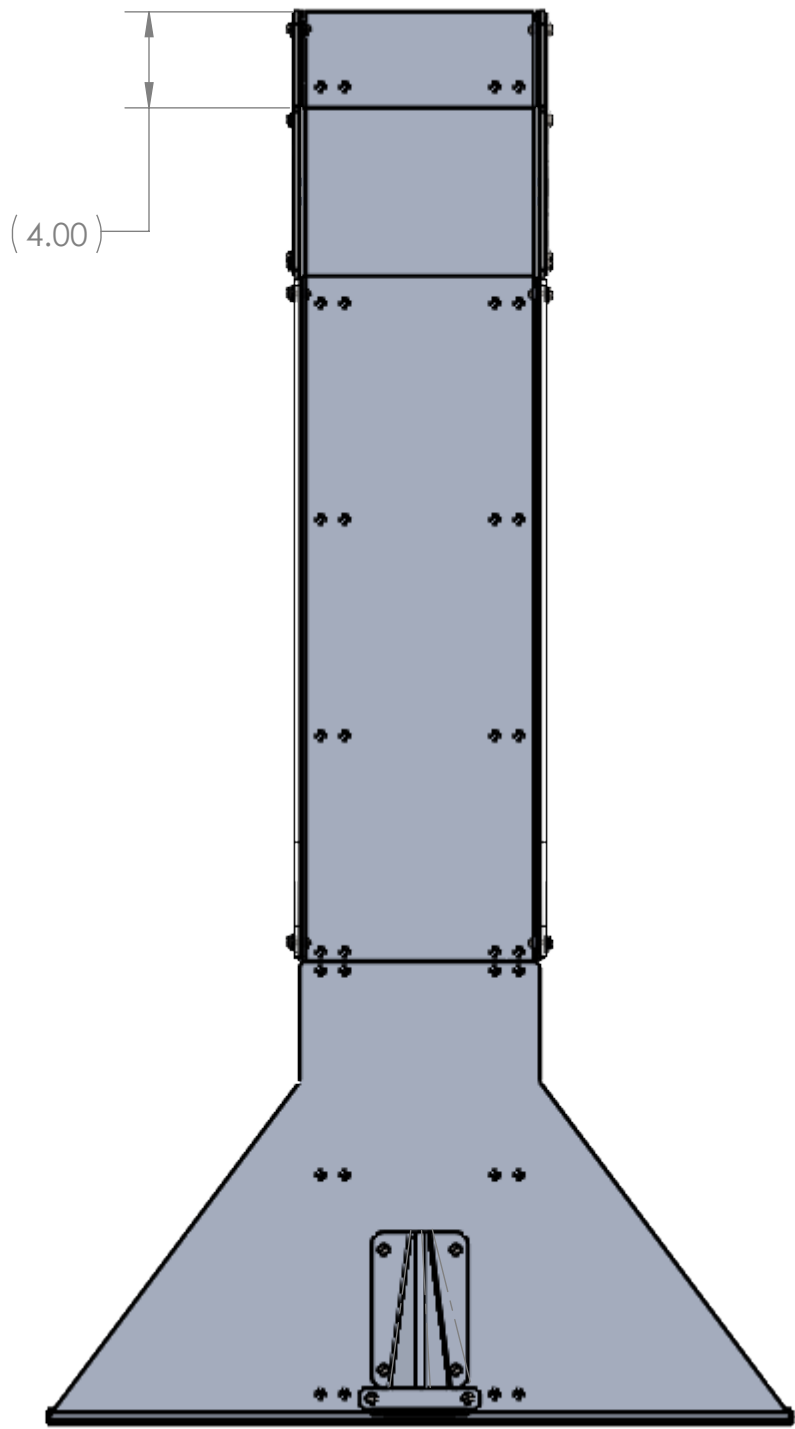
VEND	NAME	DATE
DRAWN	KAMC	7/6/2021



PROPRIETARY AND CONFIDENTIAL
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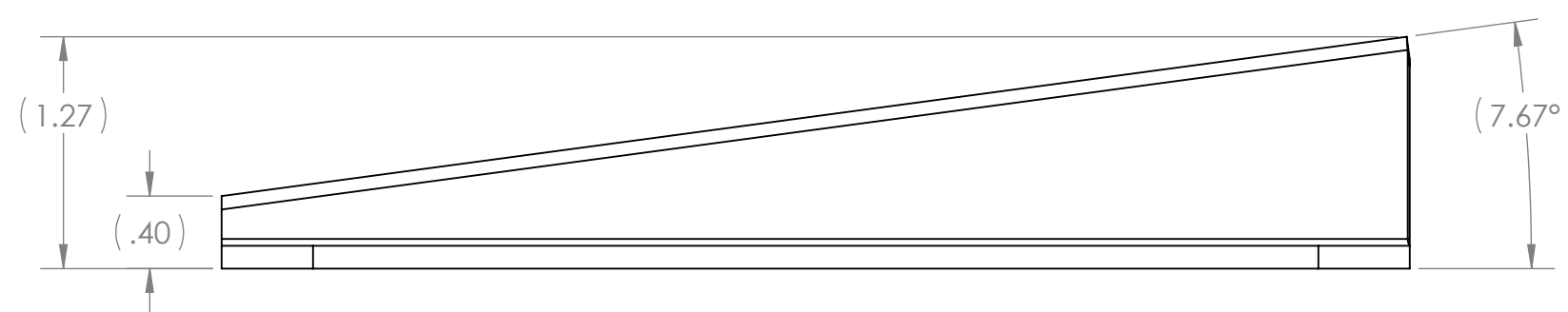
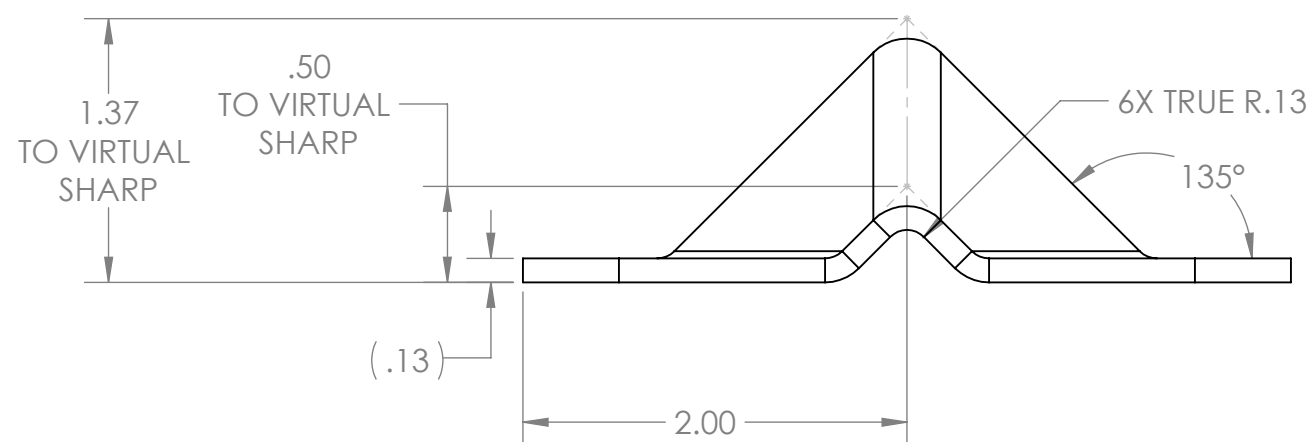
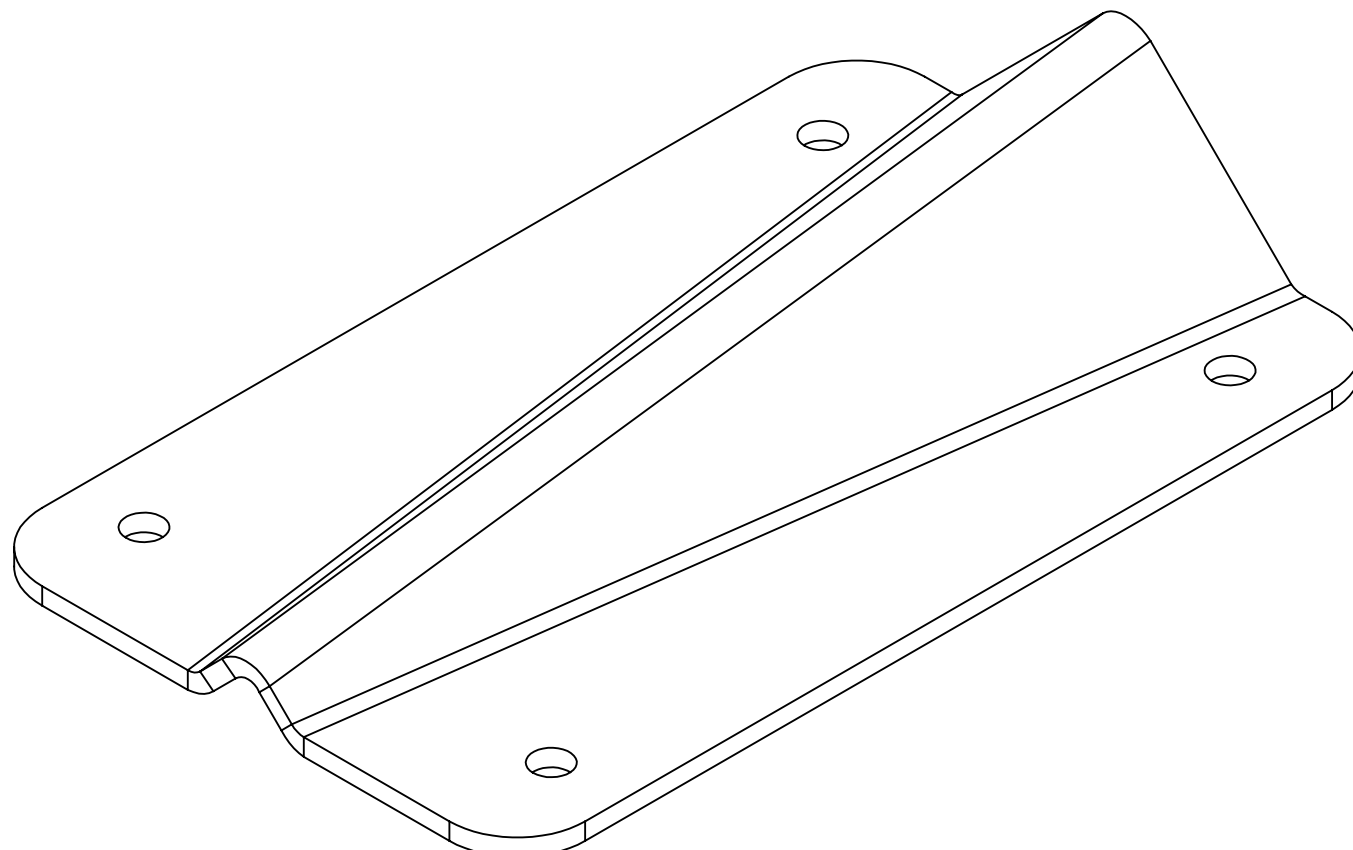
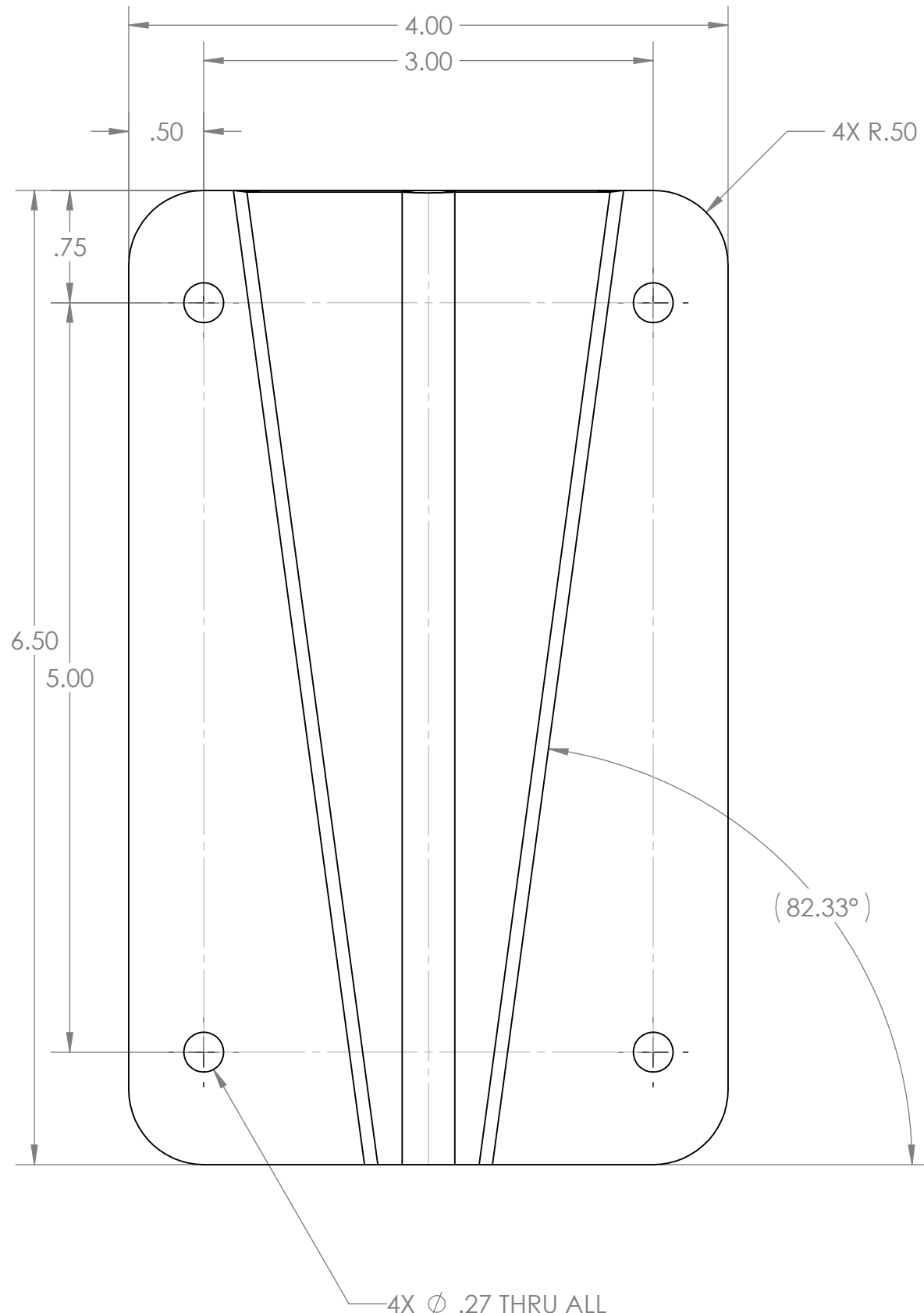
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.





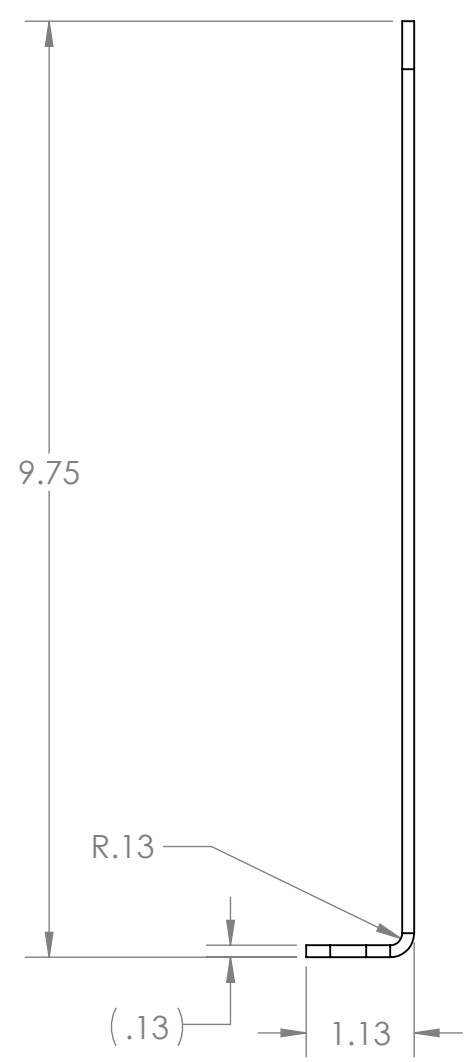
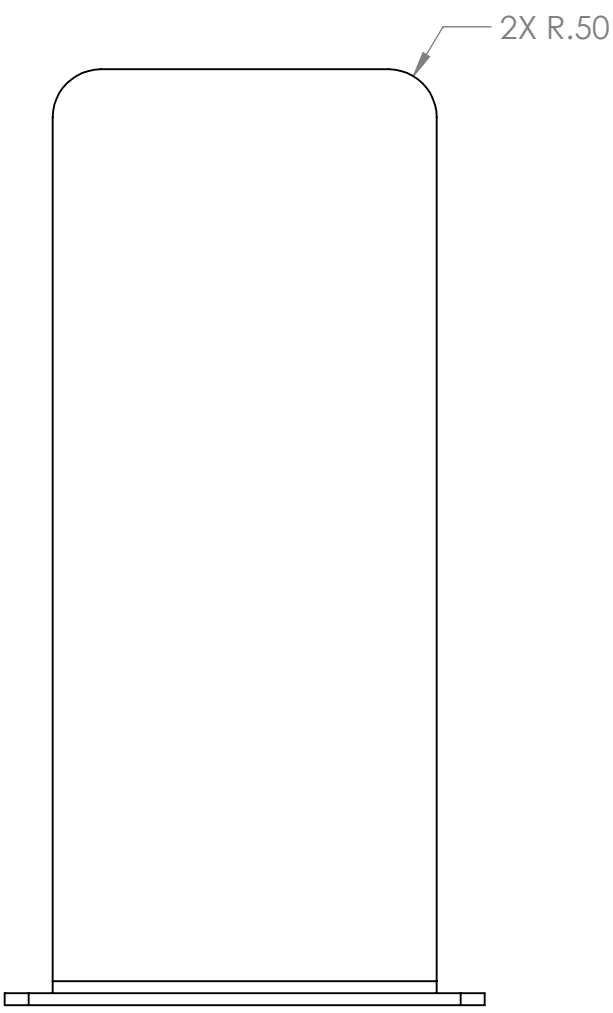
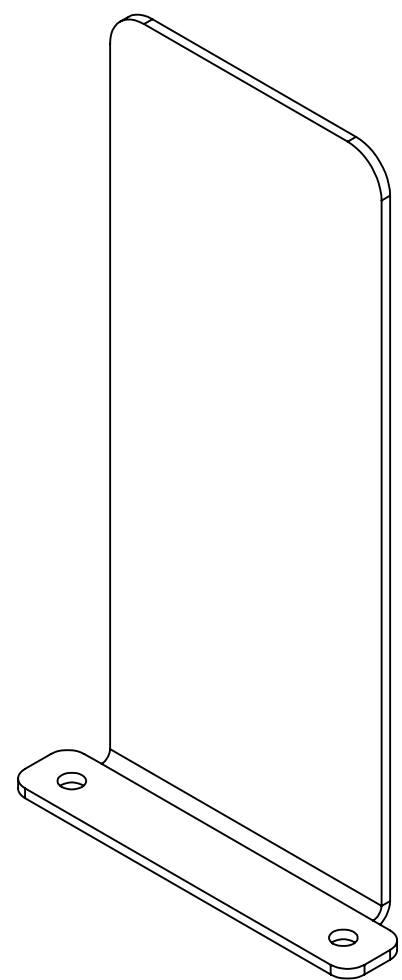
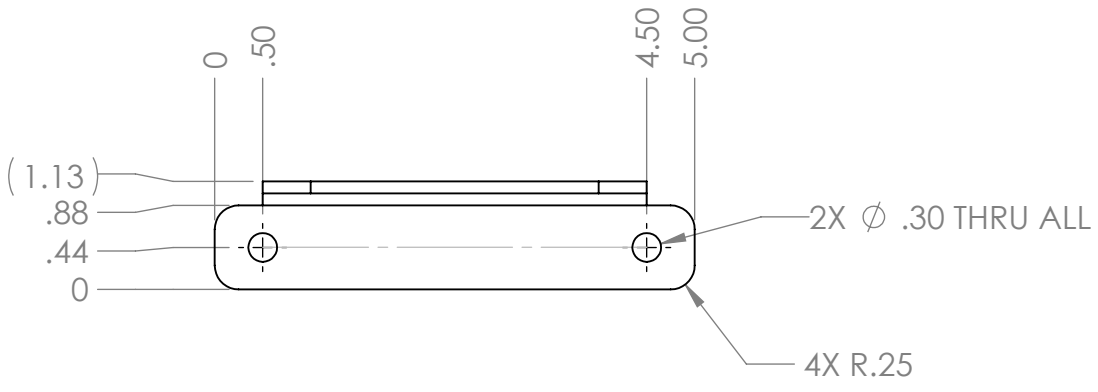
TITLE: Upper Exit Assembly		
SIZE C	DWG. NO. GE-22391	REV
SCALE: 1:8		SHEET 1 OF 2





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: Tag or label with part number DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	KAMC	7/6/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Upper Exit Assembly	
			SIZE	DWG. NO.	REV
			C	GE-22391	
			SCALE: 1:8		SHEET 2 OF 2

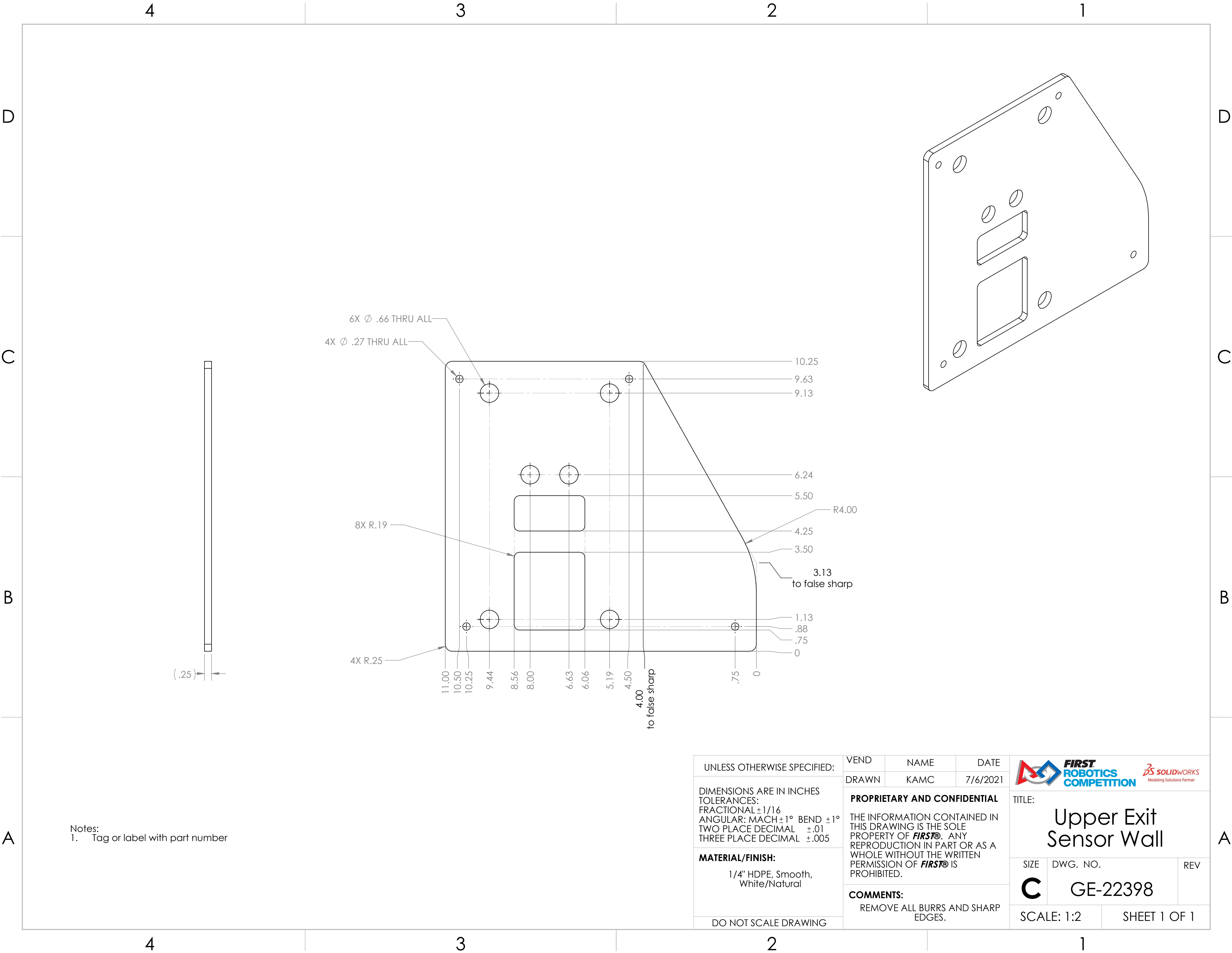


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010 MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE	<div><div></div><div>TITLE: <h1>Horn</h1></div></div>			
	DRAWN	KAMC	6/9/2021				
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				C	GE-22392	
				SCALE: 1:1		SHEET 1 OF 1	





Notes:
1. Tag or label with part number

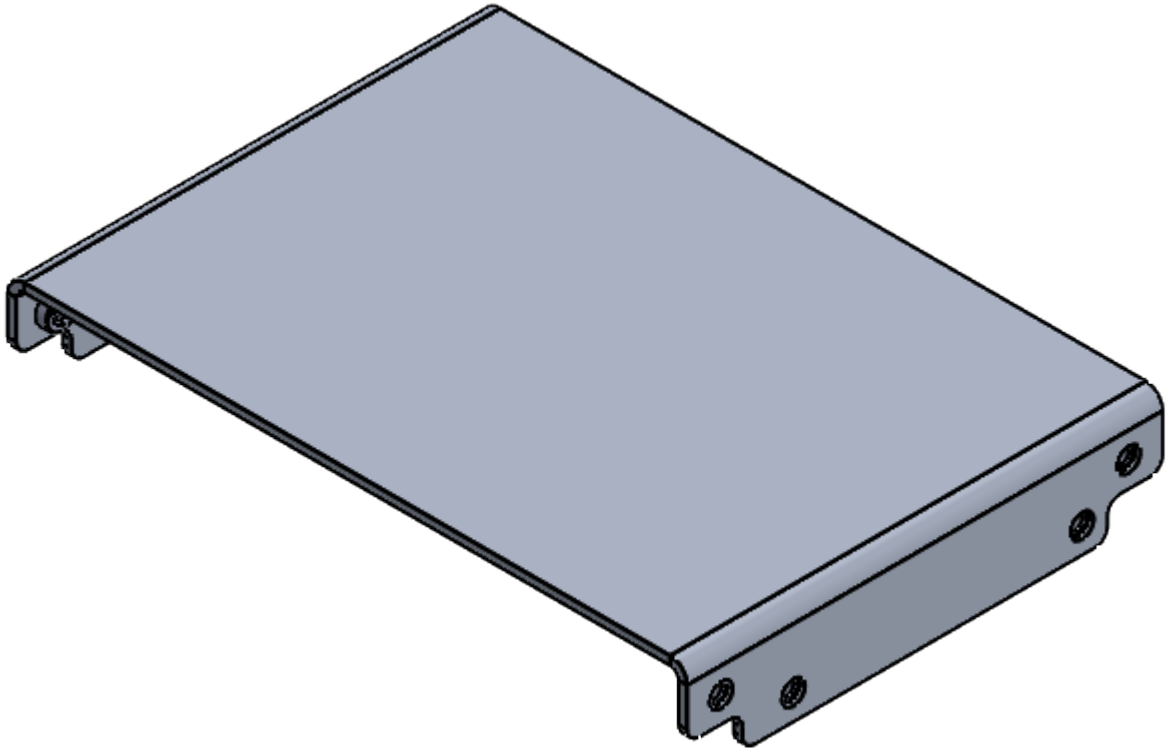
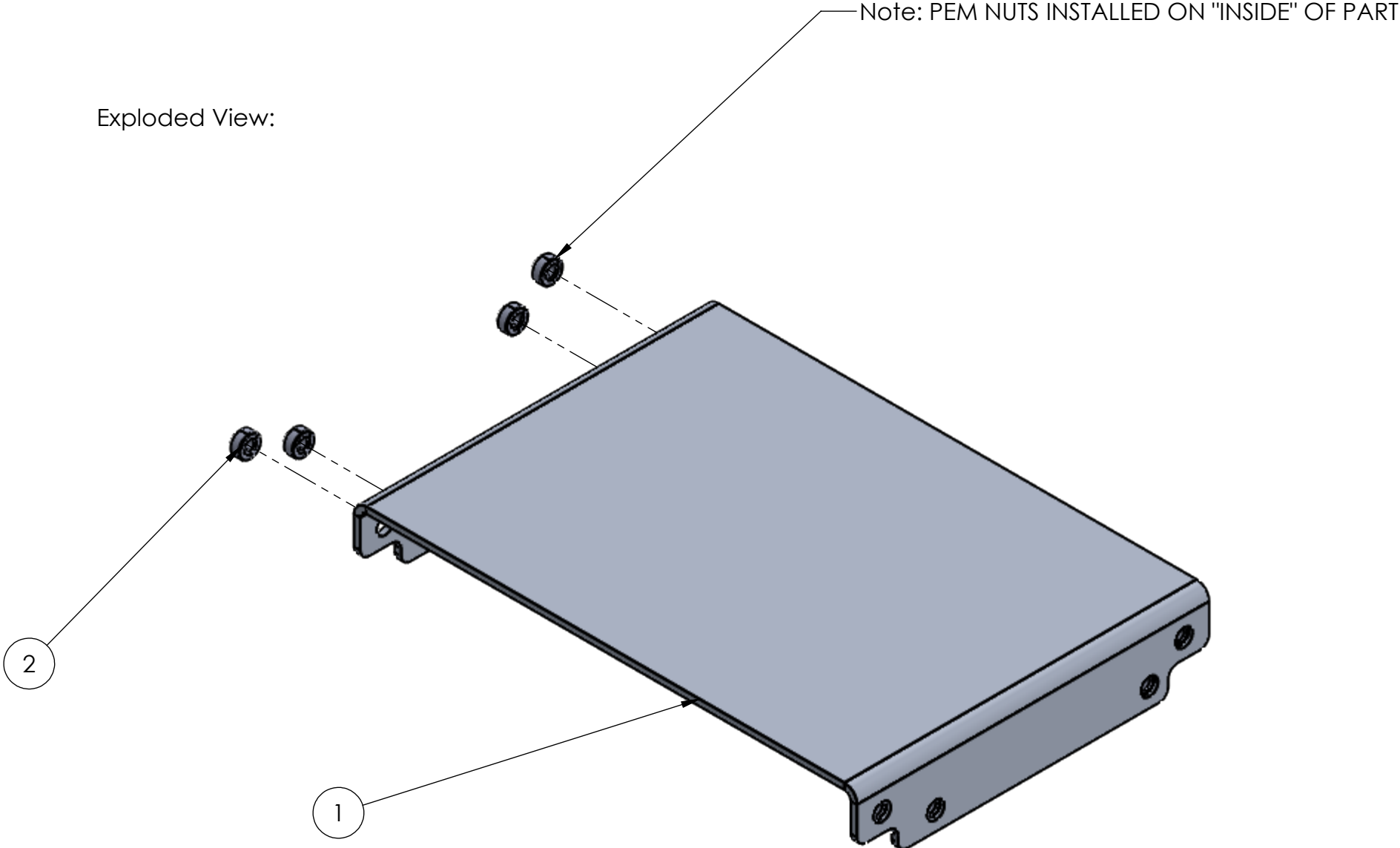
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	DRAWN	KAMC	7/6/2021				
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE	DWG. NO.	REV
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				SCALE: 1:2		SHEET 1 OF 1	



Notes:
1. Tag or label with part number

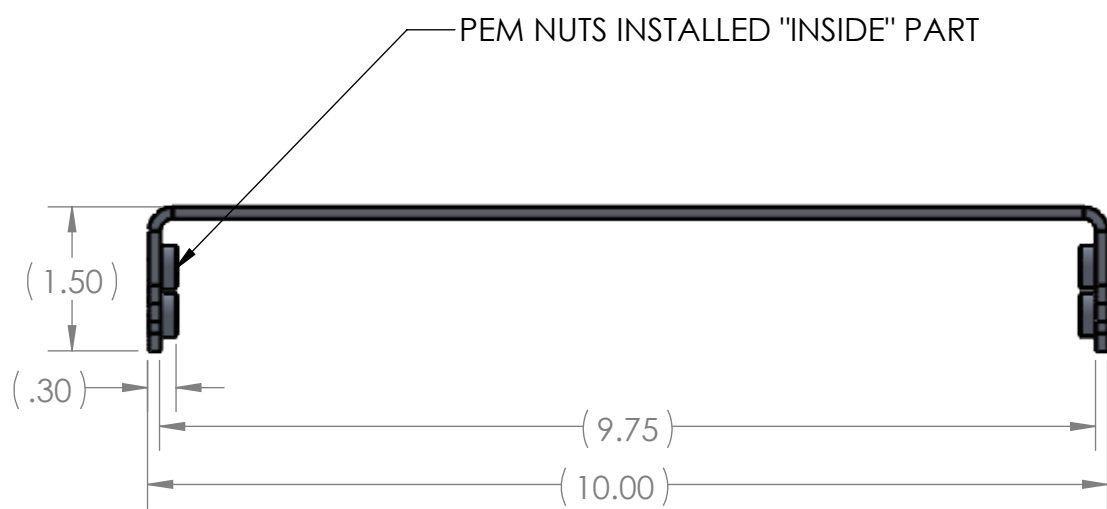
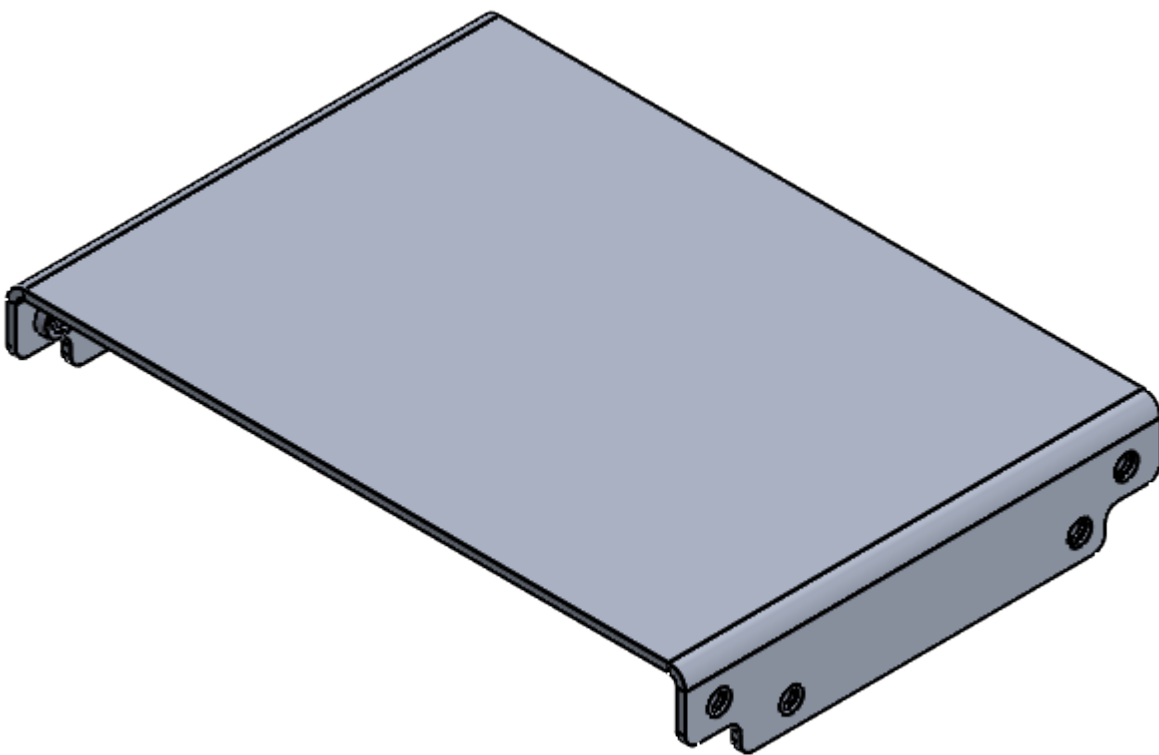
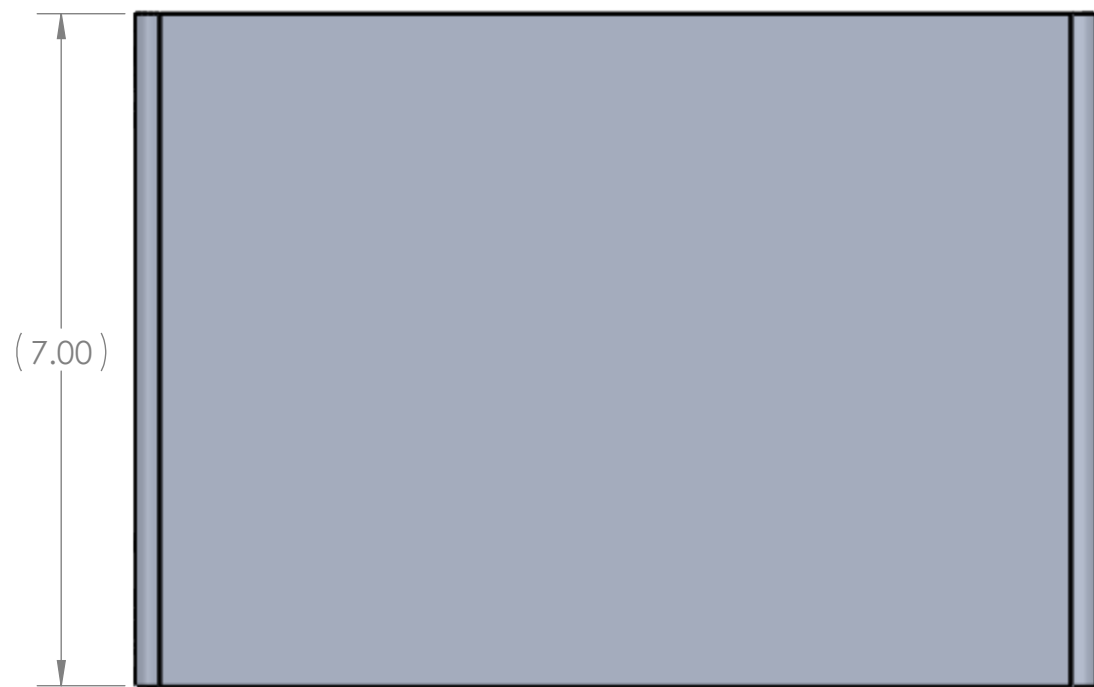
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: 1/4" HDPE, Smooth, White/Natural DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Upper Exit Sensor Wall</div>	
	DRAWN	KAMC	7/6/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22398
SCALE: 1:2		SHEET 1 OF 1			

Exploded View:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22399-01	Upper Exit Top	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8

<div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$</div> <div>MATERIAL/FINISH: Tag or label with part number</div> <div>DO NOT SCALE DRAWING</div>	VEND	NAME	DATE	TITLE: <div>Upper Exit Top with Pem Nuts</div>		
	DRAWN	KAMC	7/6/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C	DWG. NO. GE-22399	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:2 SHEET 1 OF 2		



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

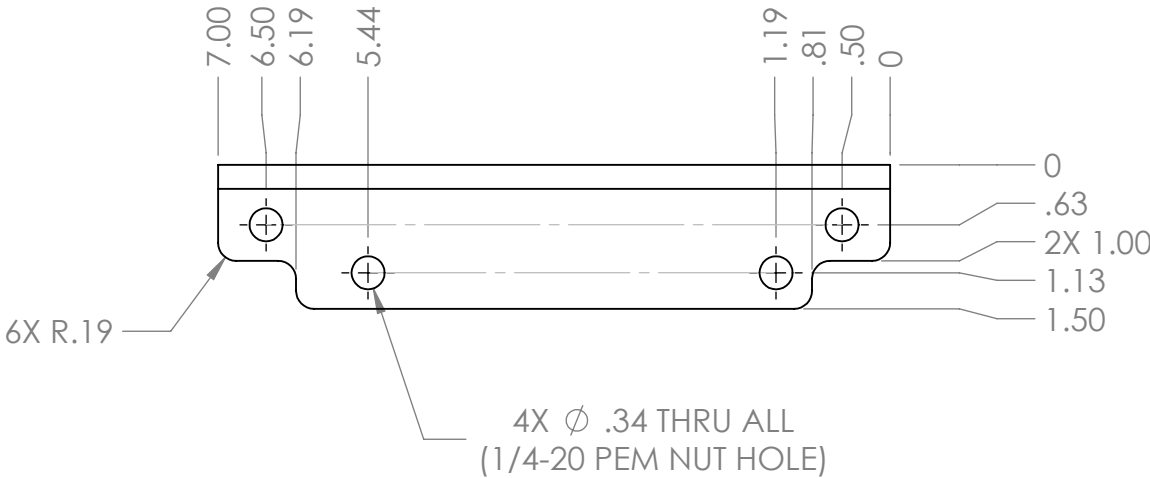
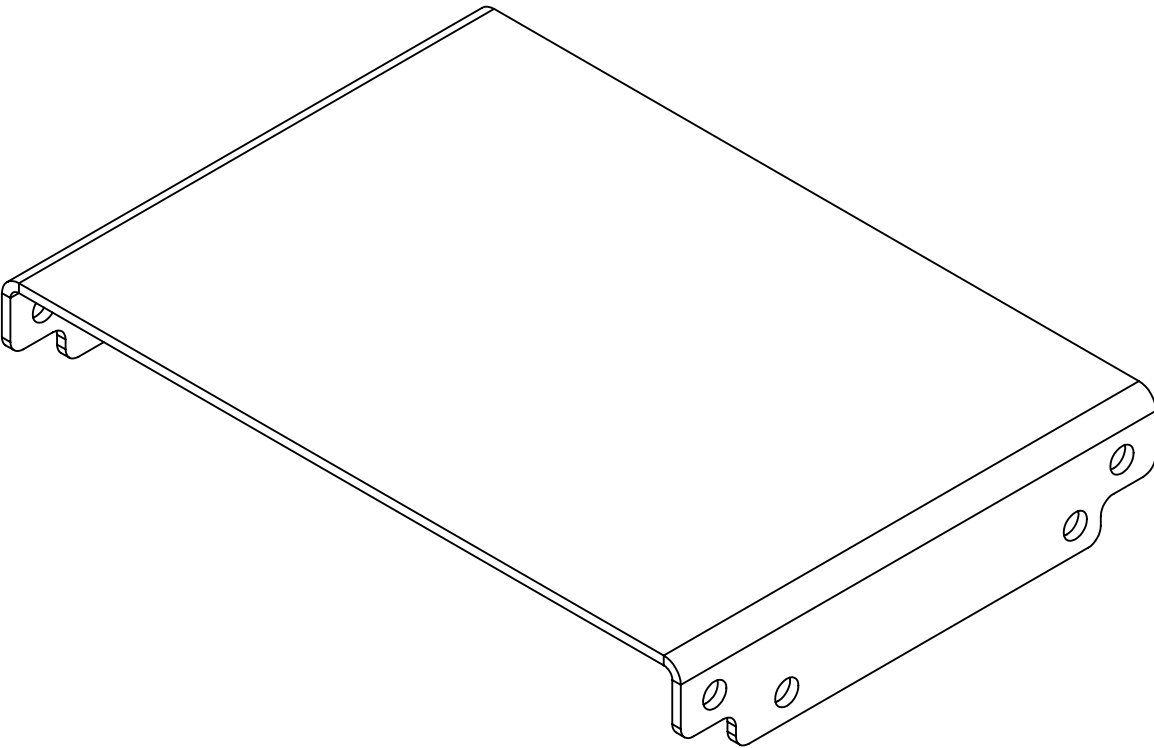
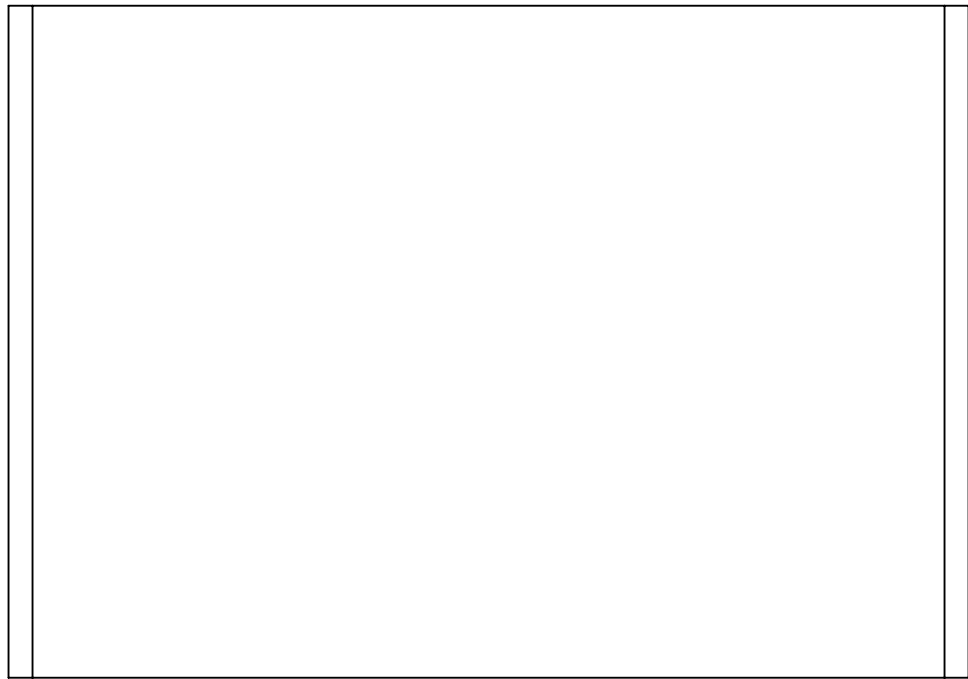
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.





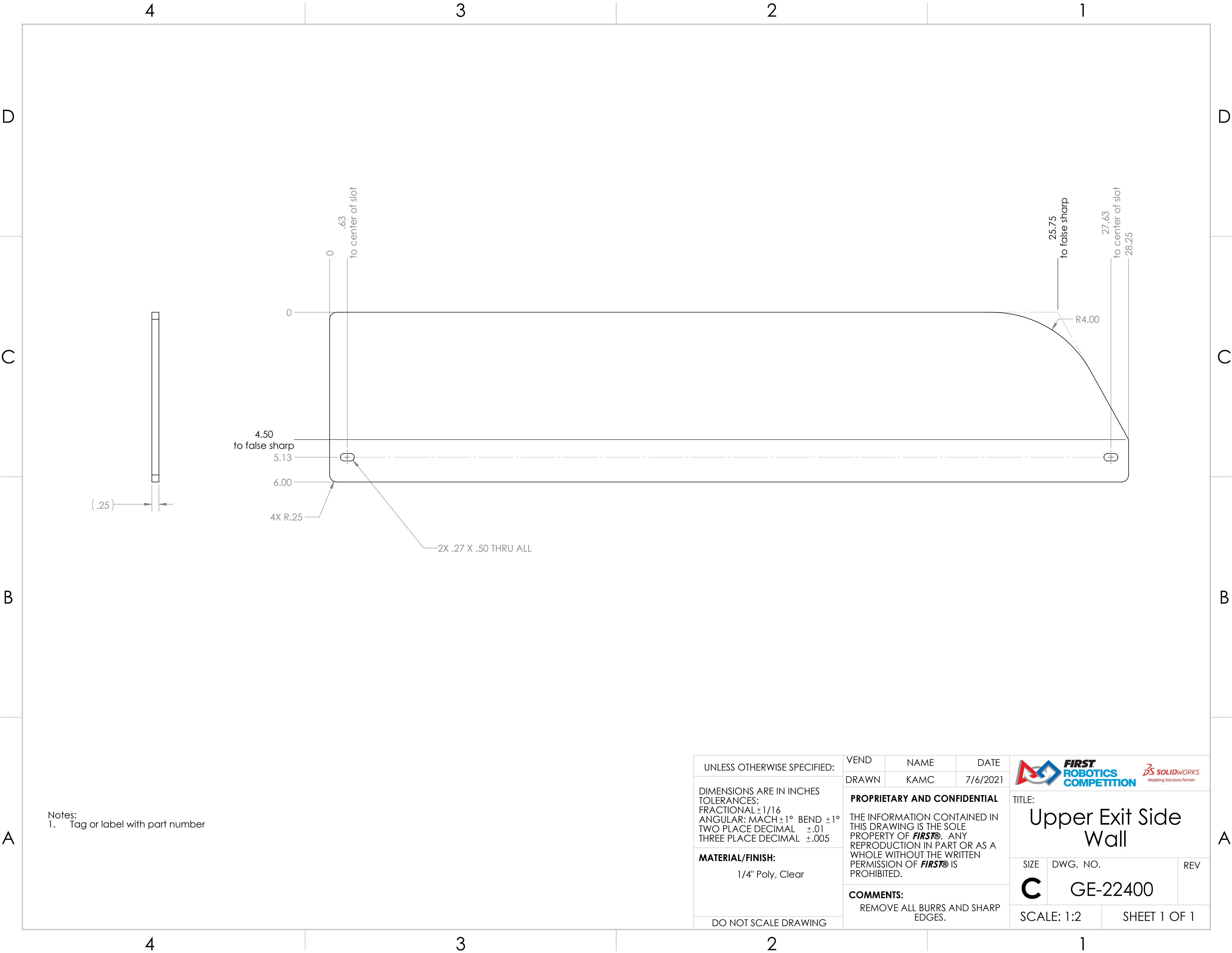
TITLE:
Upper Exit Top with Pem Nuts

SIZE	DWG. NO.	REV
C	GE-22399	



SCALE: 1:2	SHEET 2 OF 2
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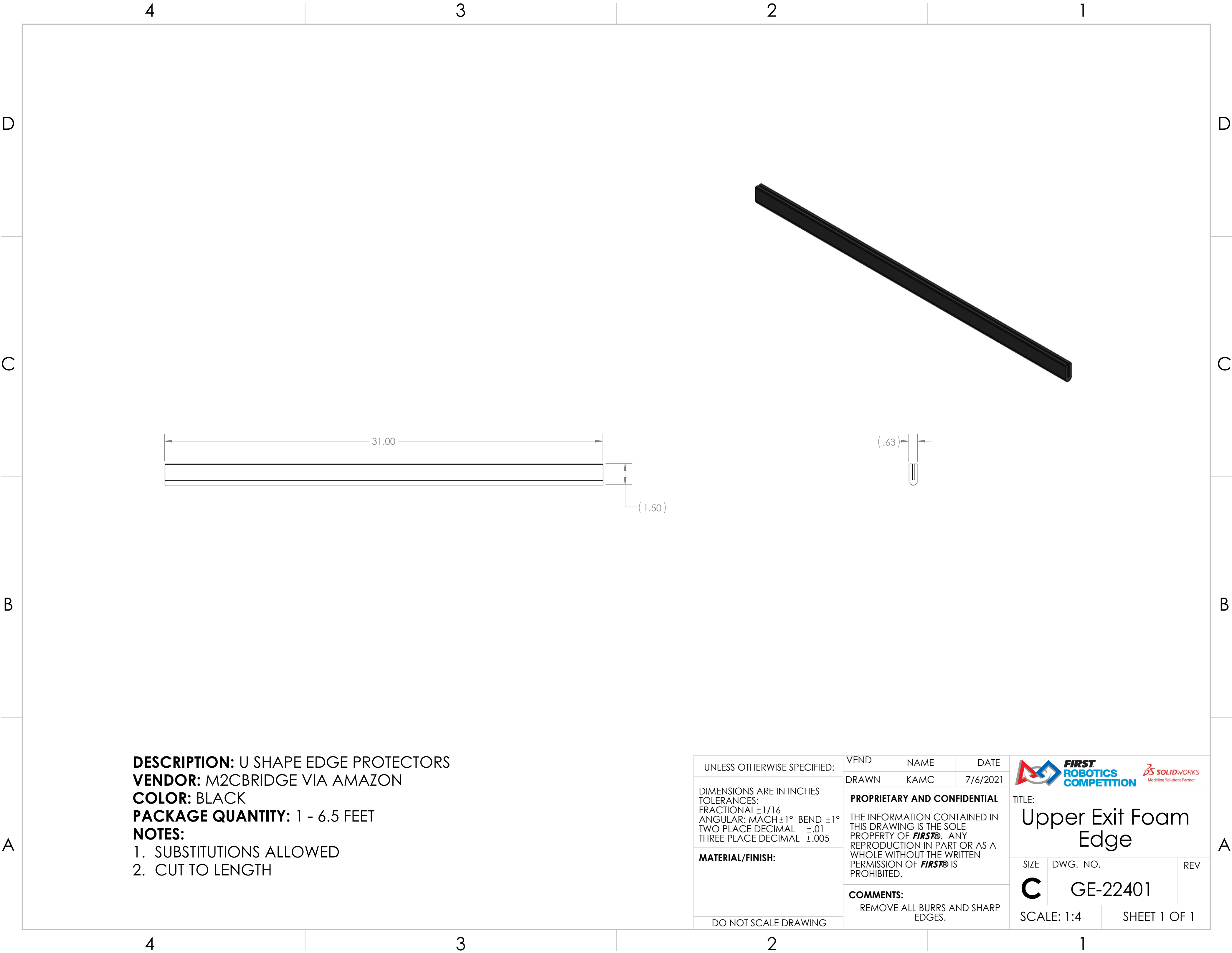


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	BEND	NAME	DATE	<div><div></div><div>TITLE: Upper Exit Top</div></div>		
	DRAWN	KAMC	7/6/2021			
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22399-01	
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1





Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: 1/4" Poly, Clear DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Upper Exit Side Wall</div>		
	DRAWN	KAMC	7/6/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE C	DWG. NO. GE-22400
		SCALE: 1:2		SHEET 1 OF 1		



DESCRIPTION: U SHAPE EDGE PROTECTORS
VENDOR: M2CBRIDGE VIA AMAZON
COLOR: BLACK
PACKAGE QUANTITY: 1 - 6.5 FEET
NOTES:
1. SUBSTITUTIONS ALLOWED
2. CUT TO LENGTH

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div>		
	DRAWN	KAMC	7/6/2021	TITLE: Upper Exit Foam Edge		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22401	
	SCALE: 1:4			SHEET 1 OF 1		

D

D

C

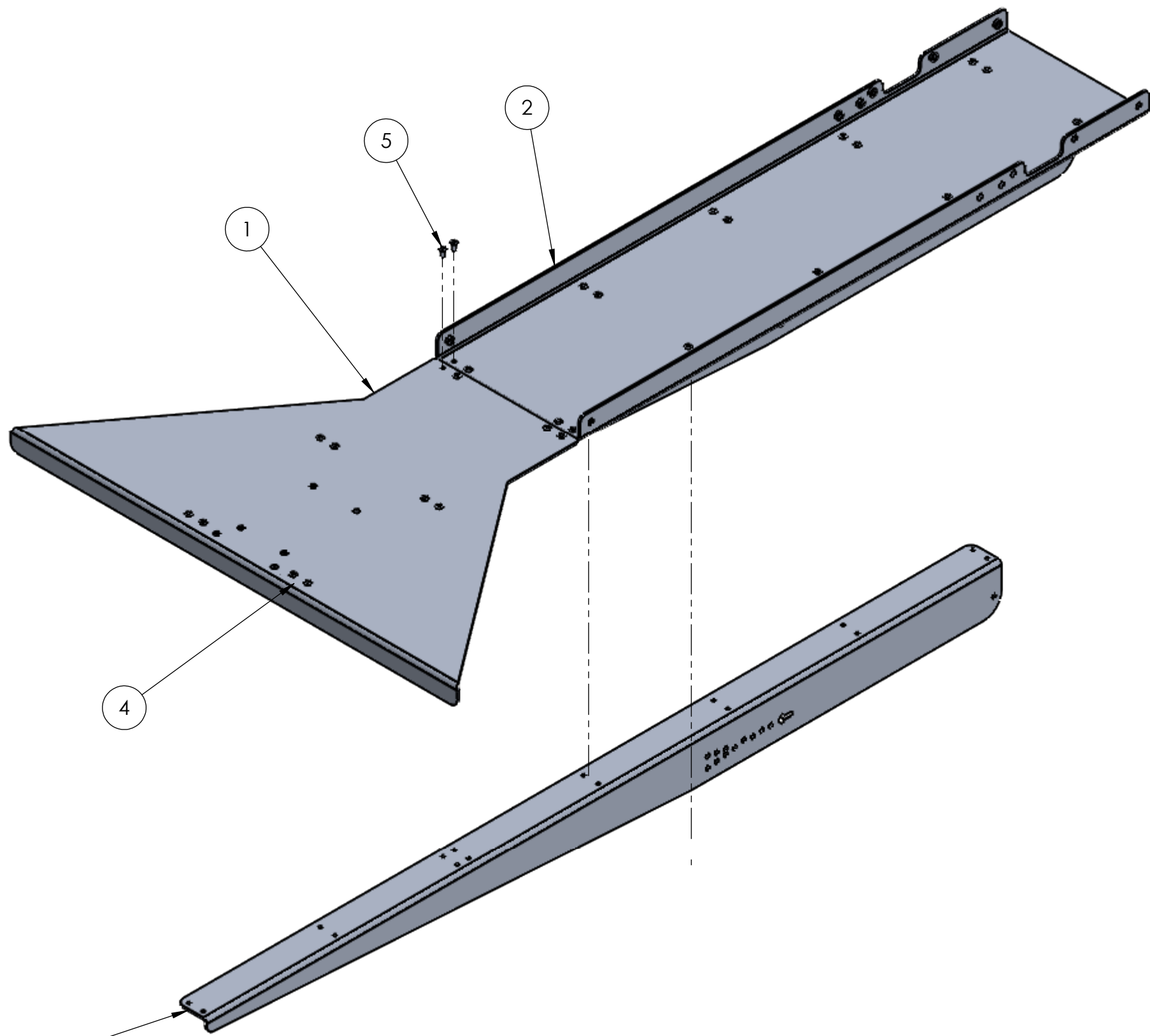
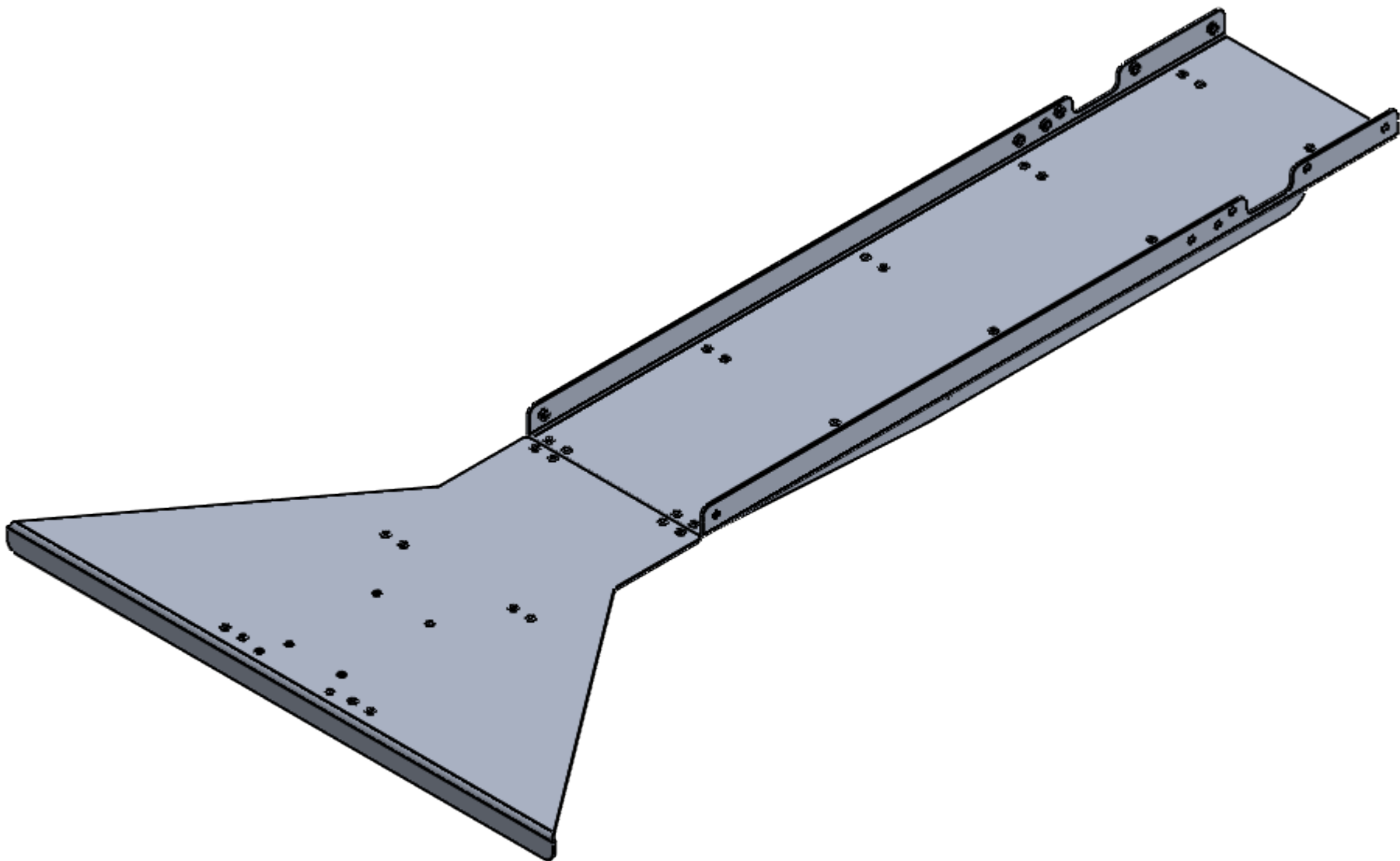
C

B

B

A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22394	Upper Exit Exit with Pem Nuts	1
2	GE-22395	Upper Exit Base Channel with Pem Nuts	1
3	GE-22397	Upper Exit to Leg Connection Left	1
4	GE-22396	Upper Exit to Leg Connection Right	1
5	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	33

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Upper Exit Riveted Assembly

SIZE	DWG. NO.	REV
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C	GE-22405	
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SCALE: 1:6	SHEET 1 OF 2
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4

3

2

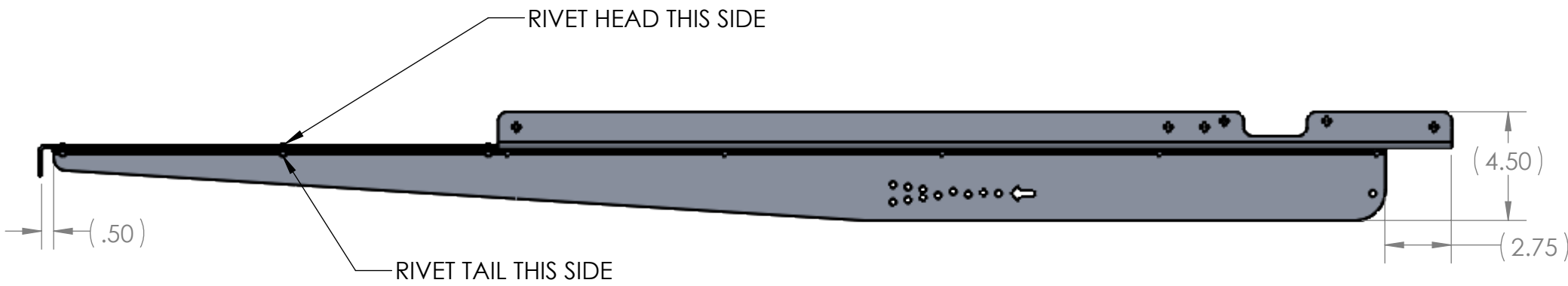
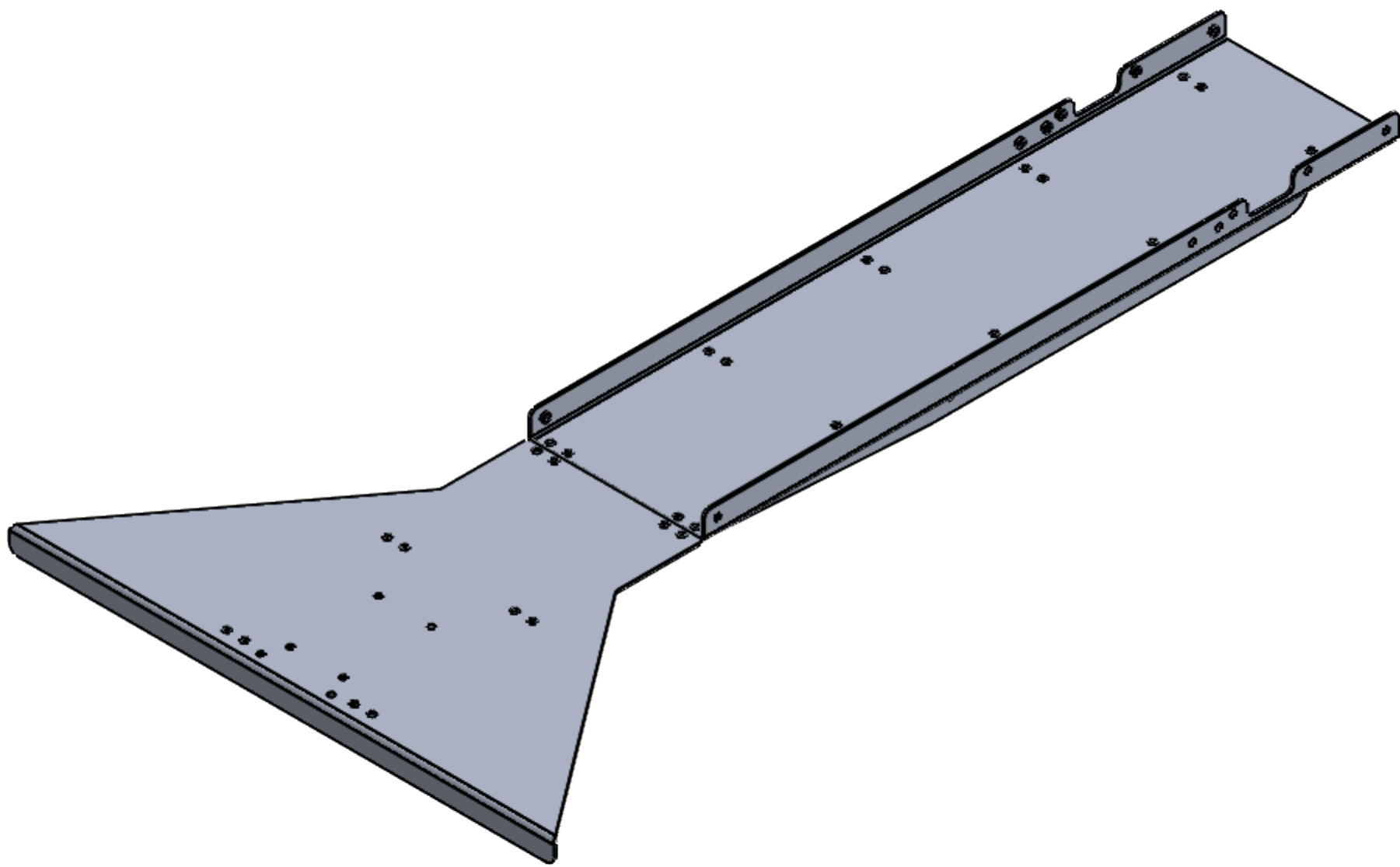
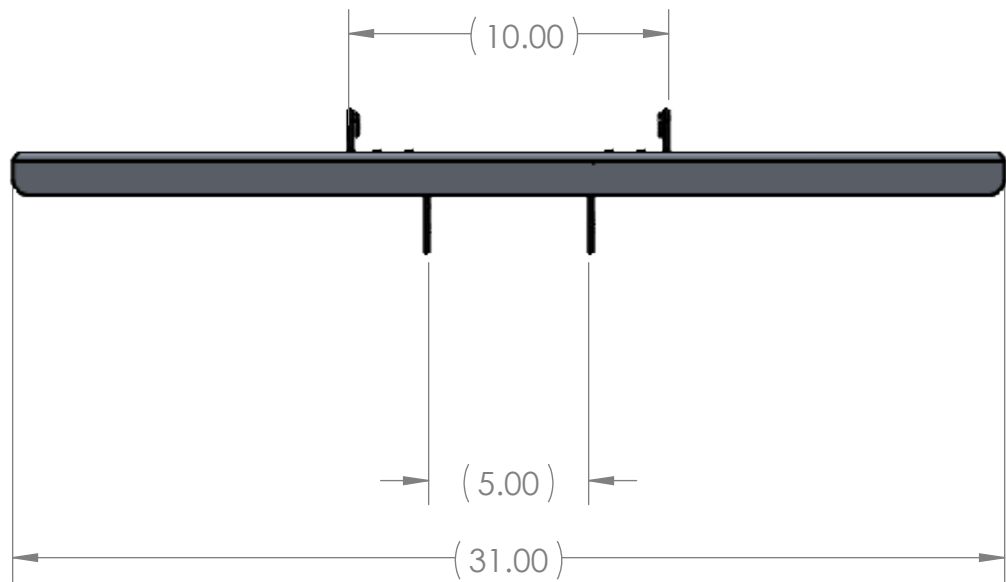
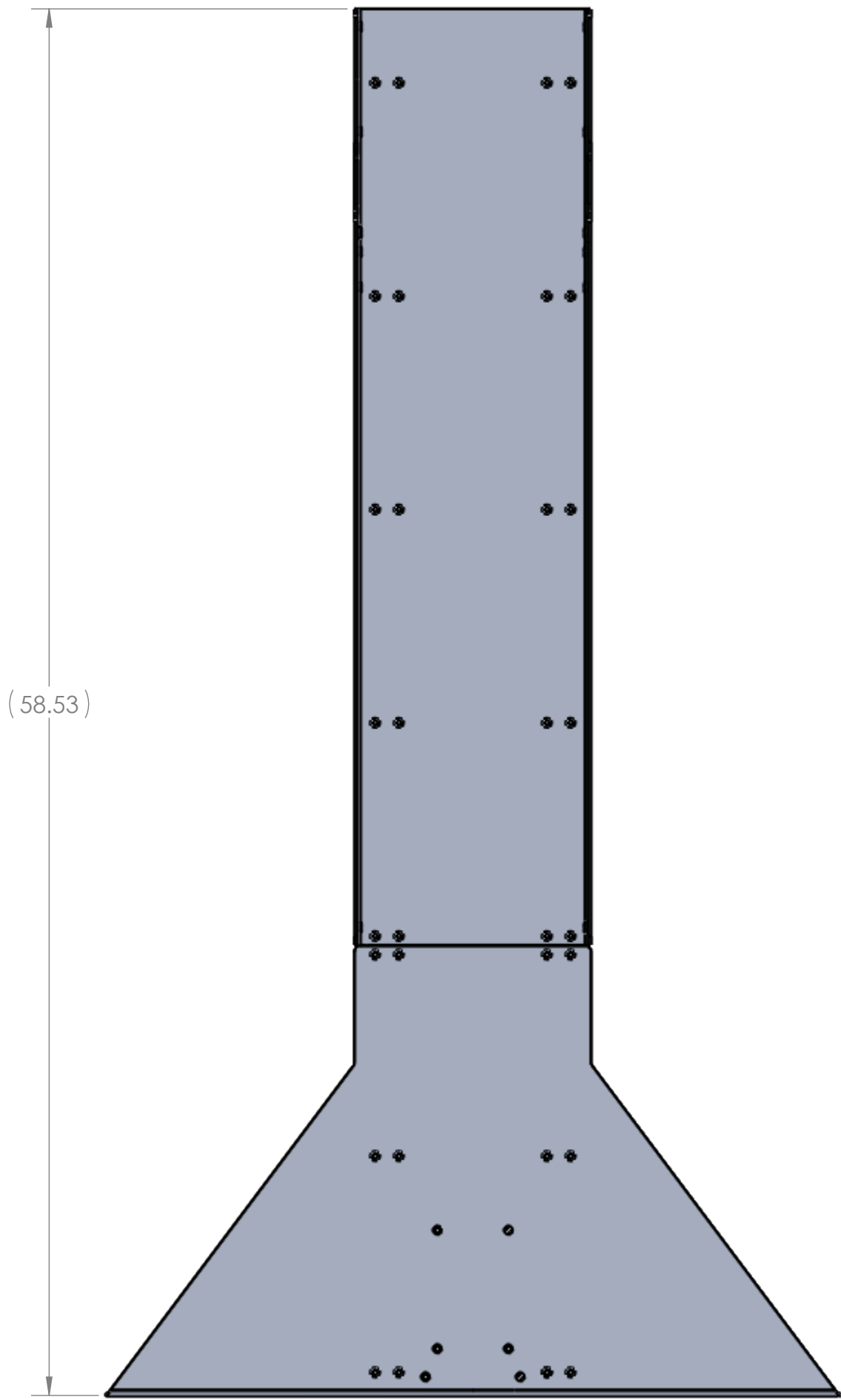
1

4

3

2

1



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

KAMC

7/6/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



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ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Upper Exit Riveted Assembly

SIZE

C

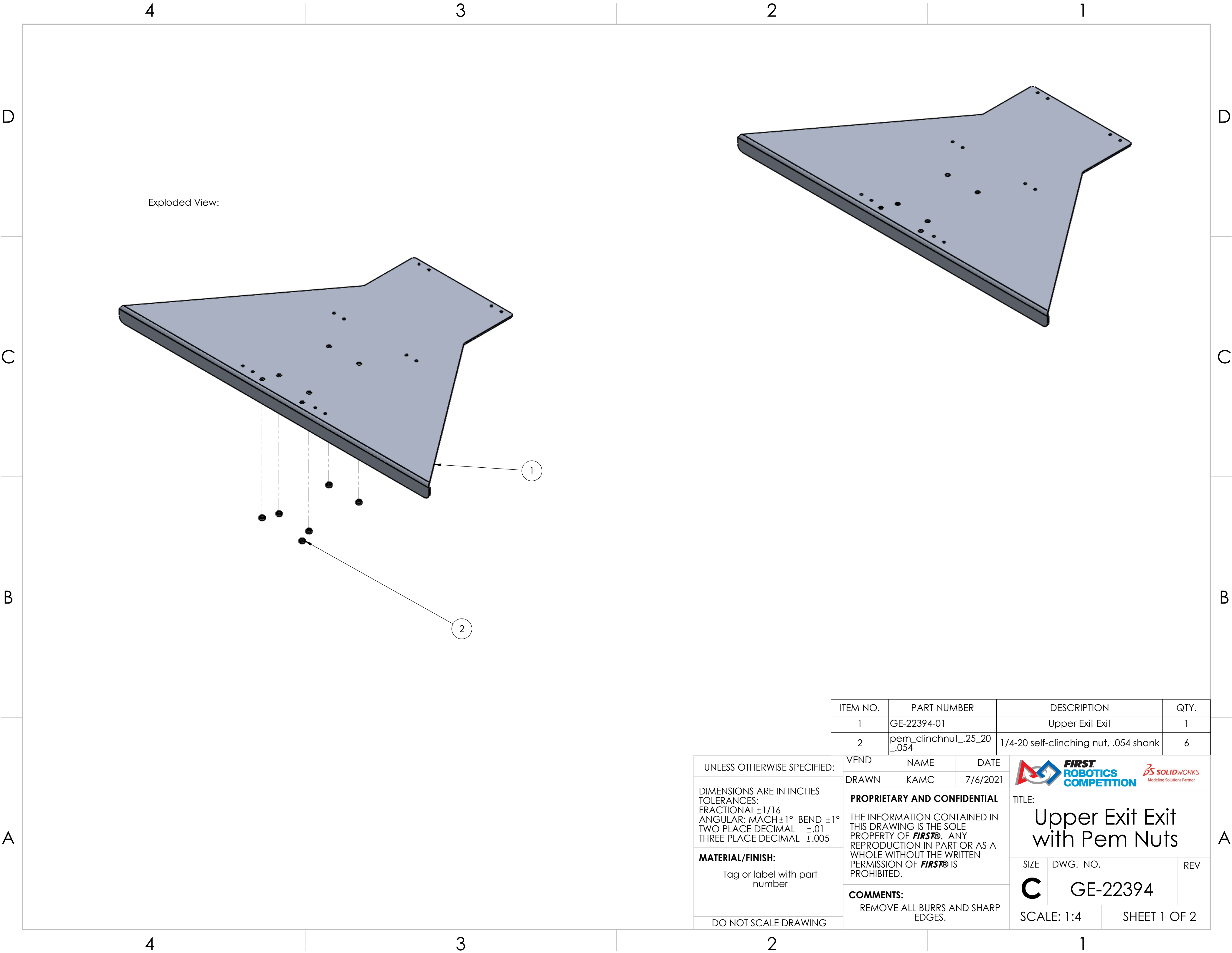
DWG. NO.

GE-22405

REV

SCALE: 1:6

SHEET 2 OF 2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22394-01	Upper Exit Exit	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	6

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

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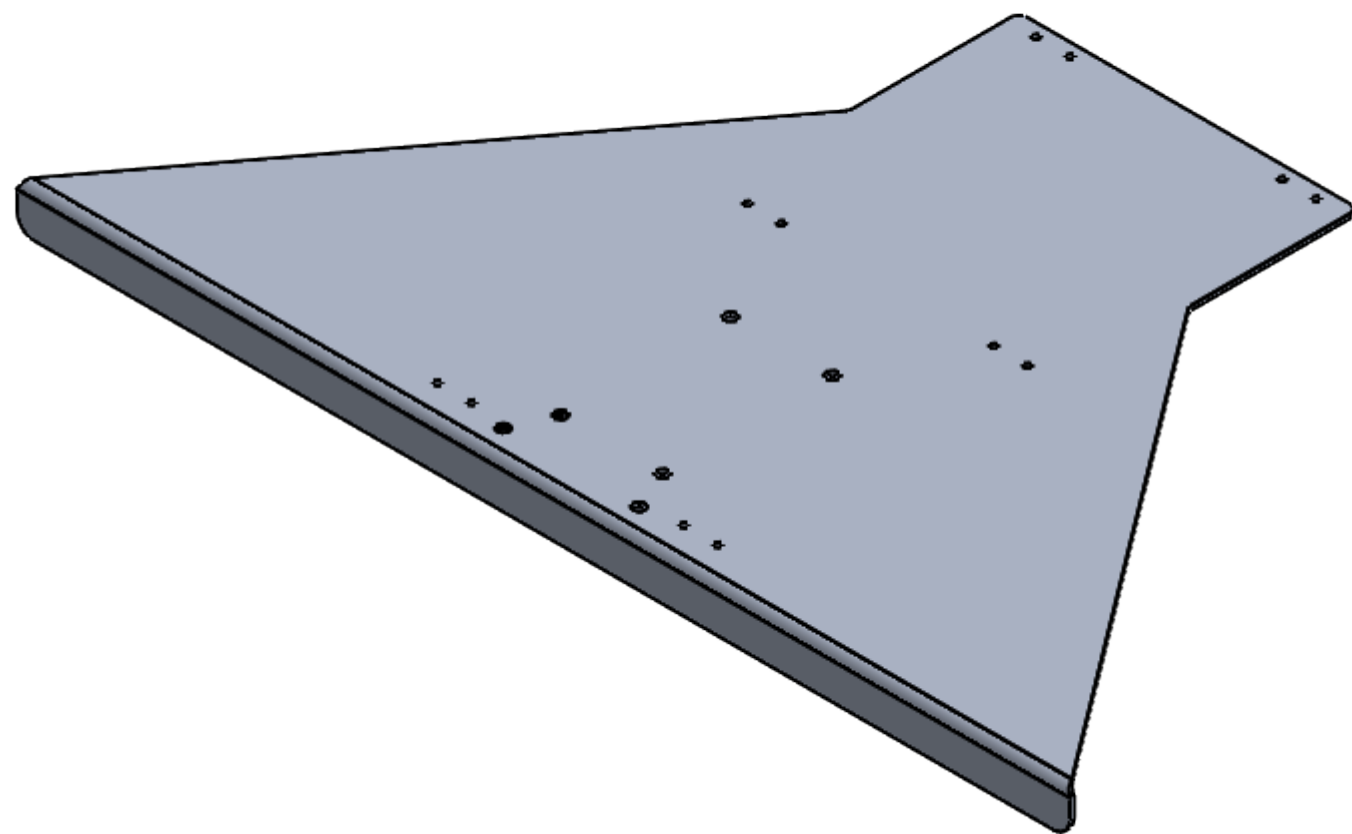
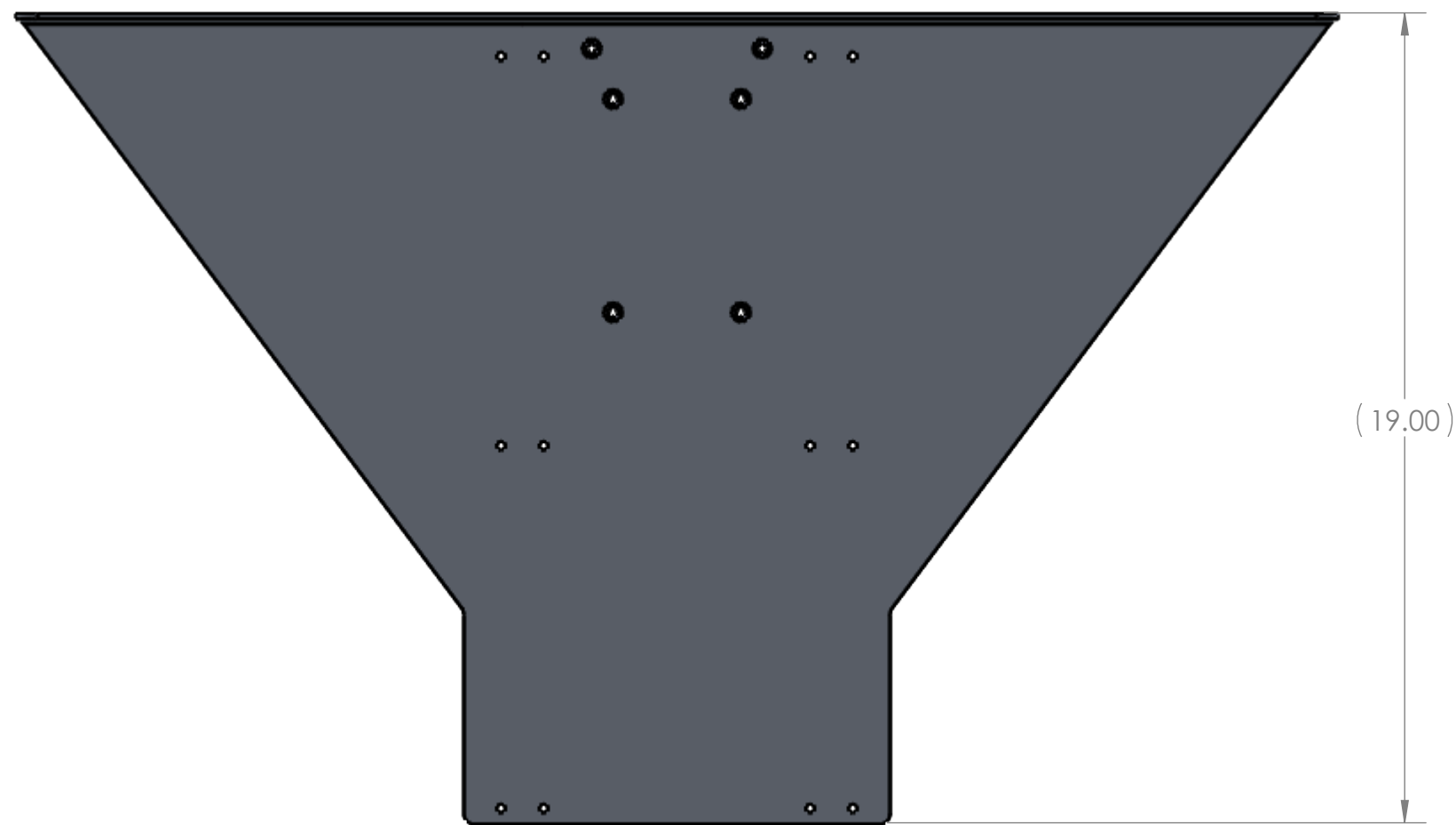
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

	
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TITLE:
Upper Exit Exit with Pem Nuts

SIZE C	DWG. NO. GE-22394	REV
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SCALE: 1:4 SHEET 1 OF 2



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

PROPRIETARY AND CONFIDENTIAL

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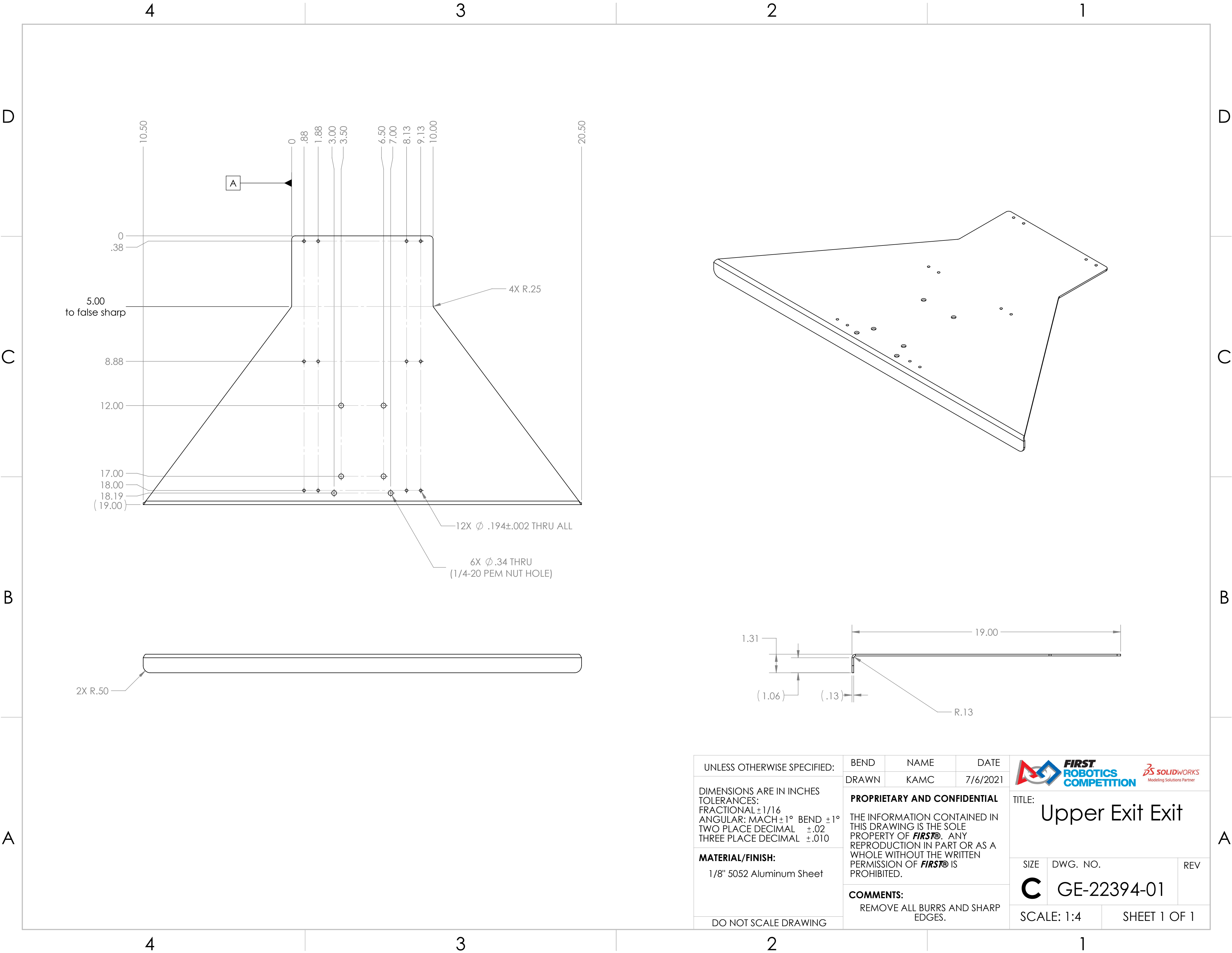
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.





TITLE:
Upper Exit Exit with Pem Nuts

SIZE	DWG. NO.	REV
C	GE-22394	

SCALE: 1:4 SHEET 2 OF 2



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: Upper Exit Exit</div> <div>SIZE C</div> <div>DWG. NO. GE-22394-01</div> <div>REV</div> <div>SCALE: 1:4</div> <div>SHEET 1 OF 1</div>	
	DRAWN	KAMC	7/6/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				

D

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C

C

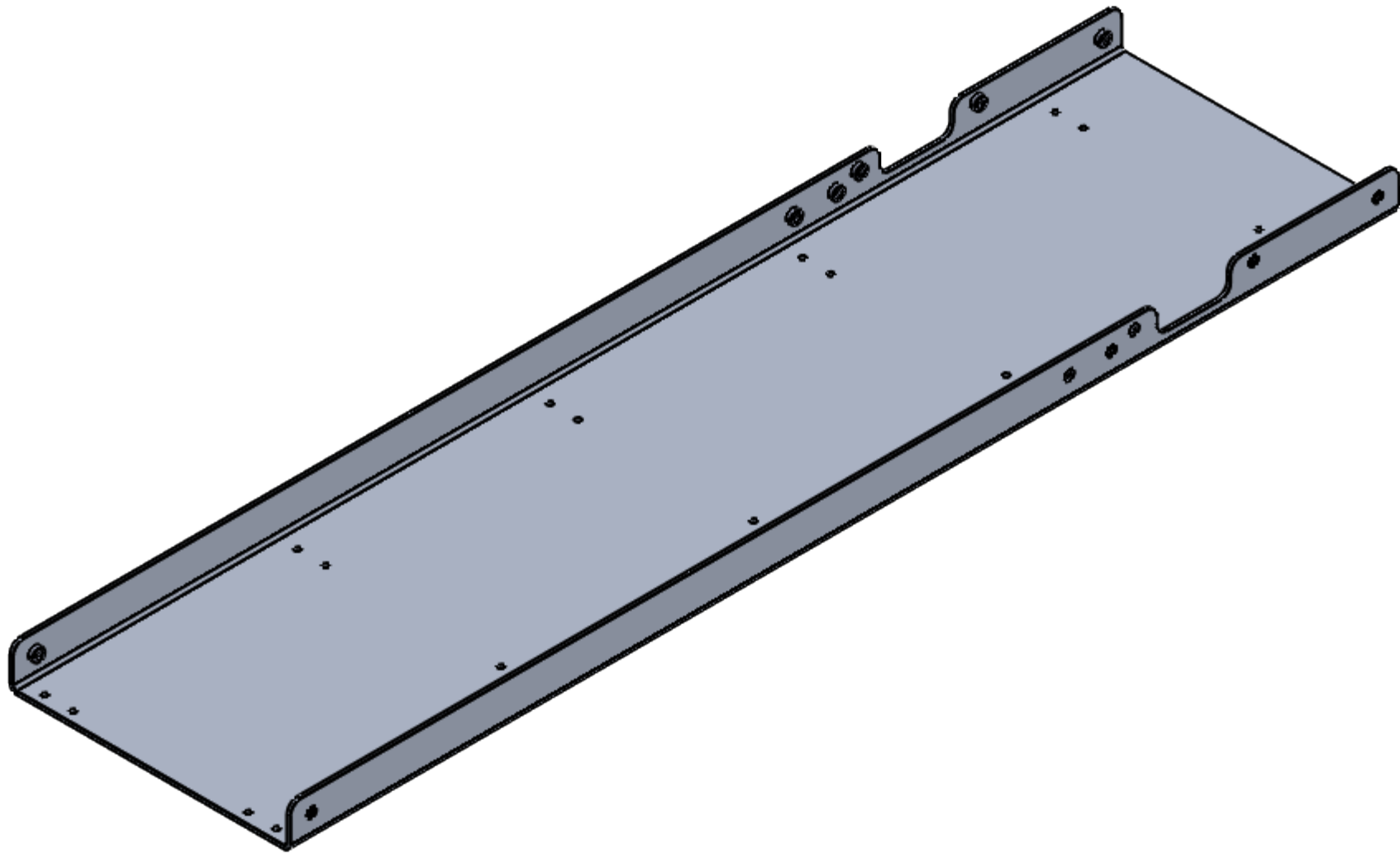
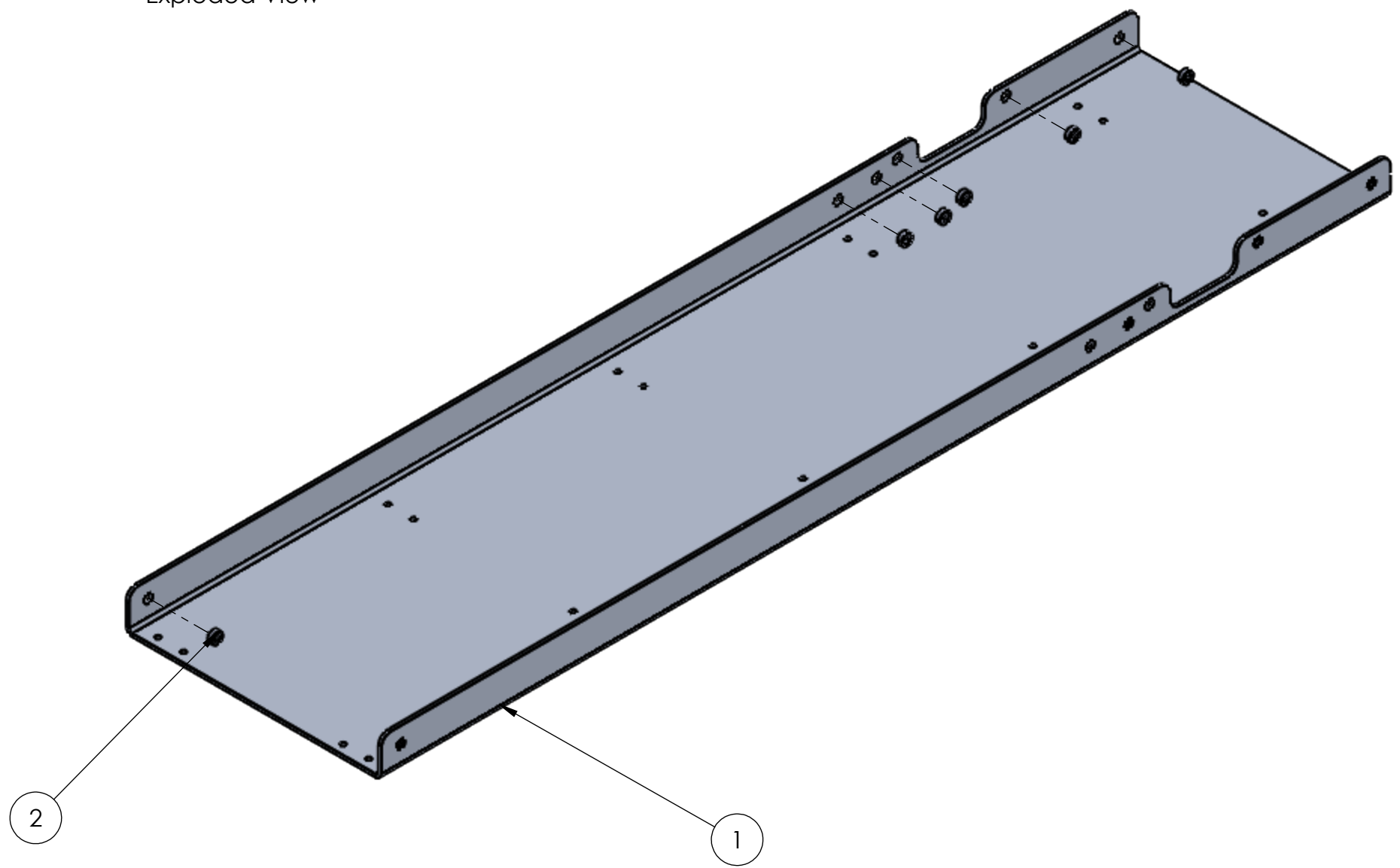
B

B



A

A

Exploded View



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22395-01	Upper Exit Base Channel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	12

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		VEND	NAME	DATE	<div></div> <div>TITLE: Upper Exit Base Channel with Pem Nuts</div>				
		DRAWN	KAMC	7/6/2021					
MATERIAL/FINISH: Tag or label with part number		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C		DWG. NO.		REV
							GE-22395		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:4		SHEET 1 OF 2		

4

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1

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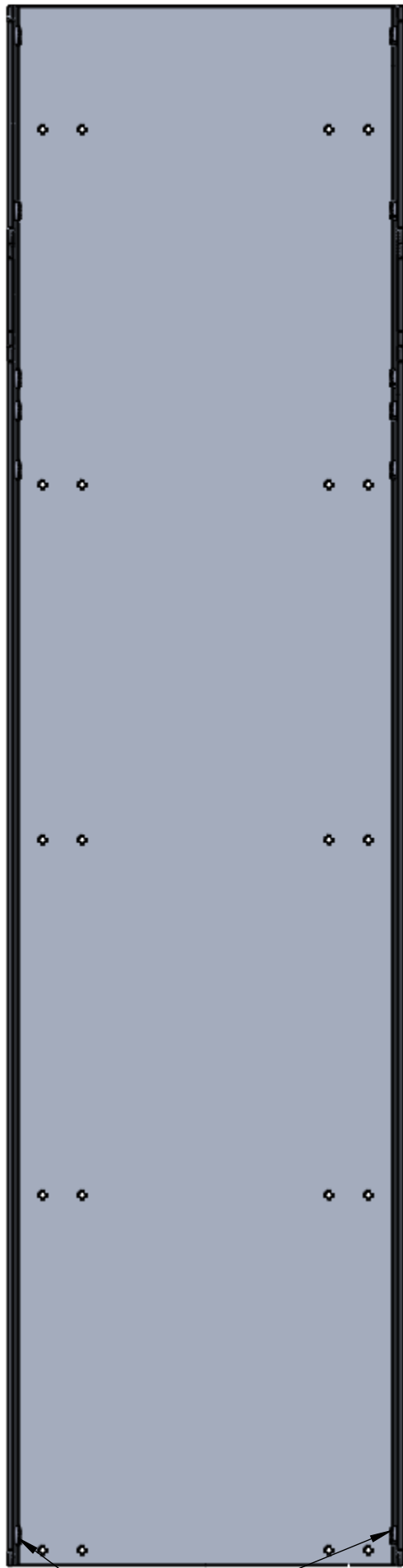
C

B

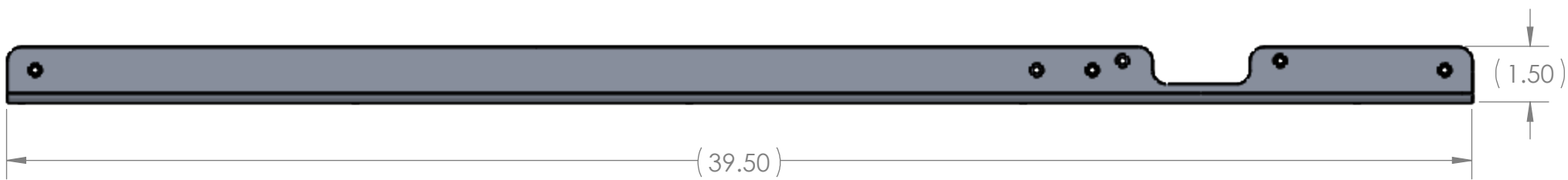
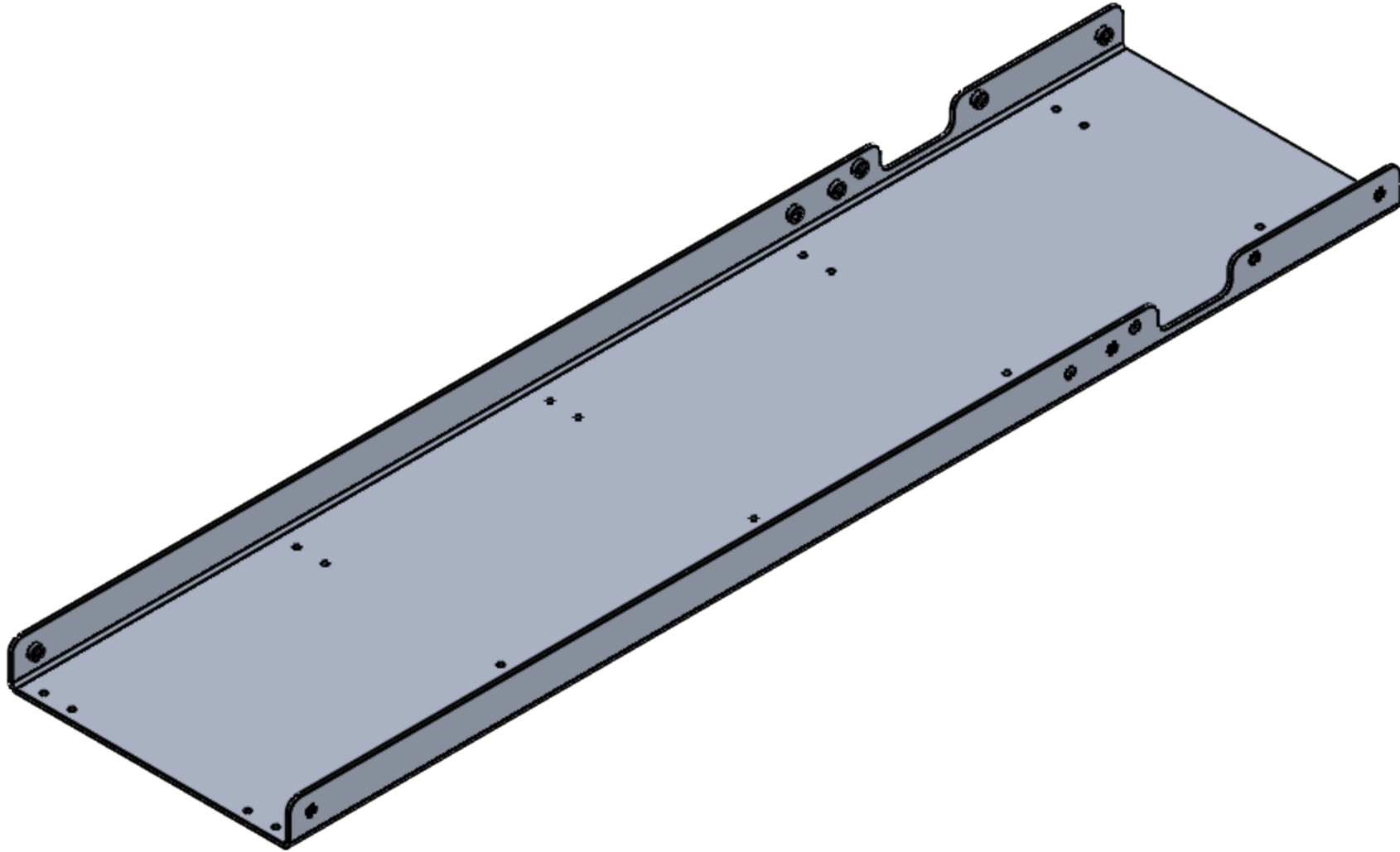
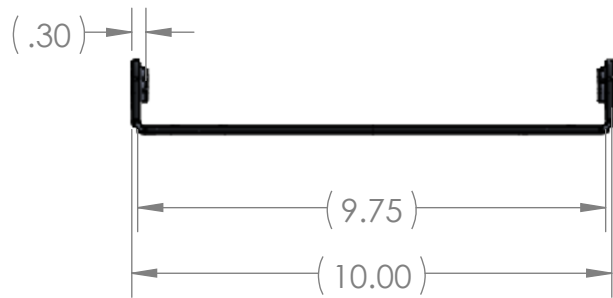
B

A

A



PEM Nuts installed on inside of part



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

KAMC

7/6/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



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COMPETITION

3D SOLIDWORKS
Modeling Solutions Partner

TITLE:

Upper Exit Base
Channel with
Pem Nuts

SIZE

DWG. NO.

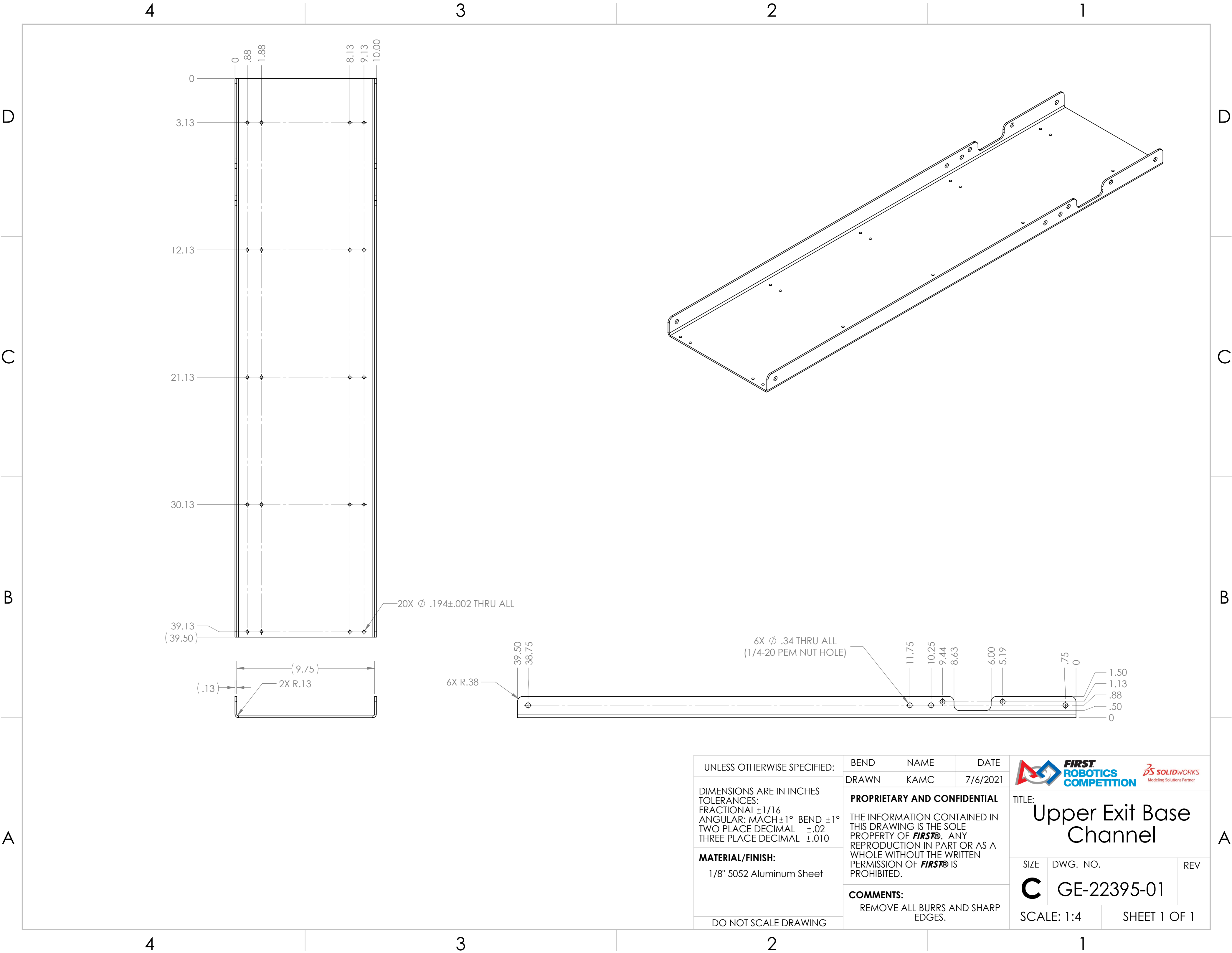
REV



C

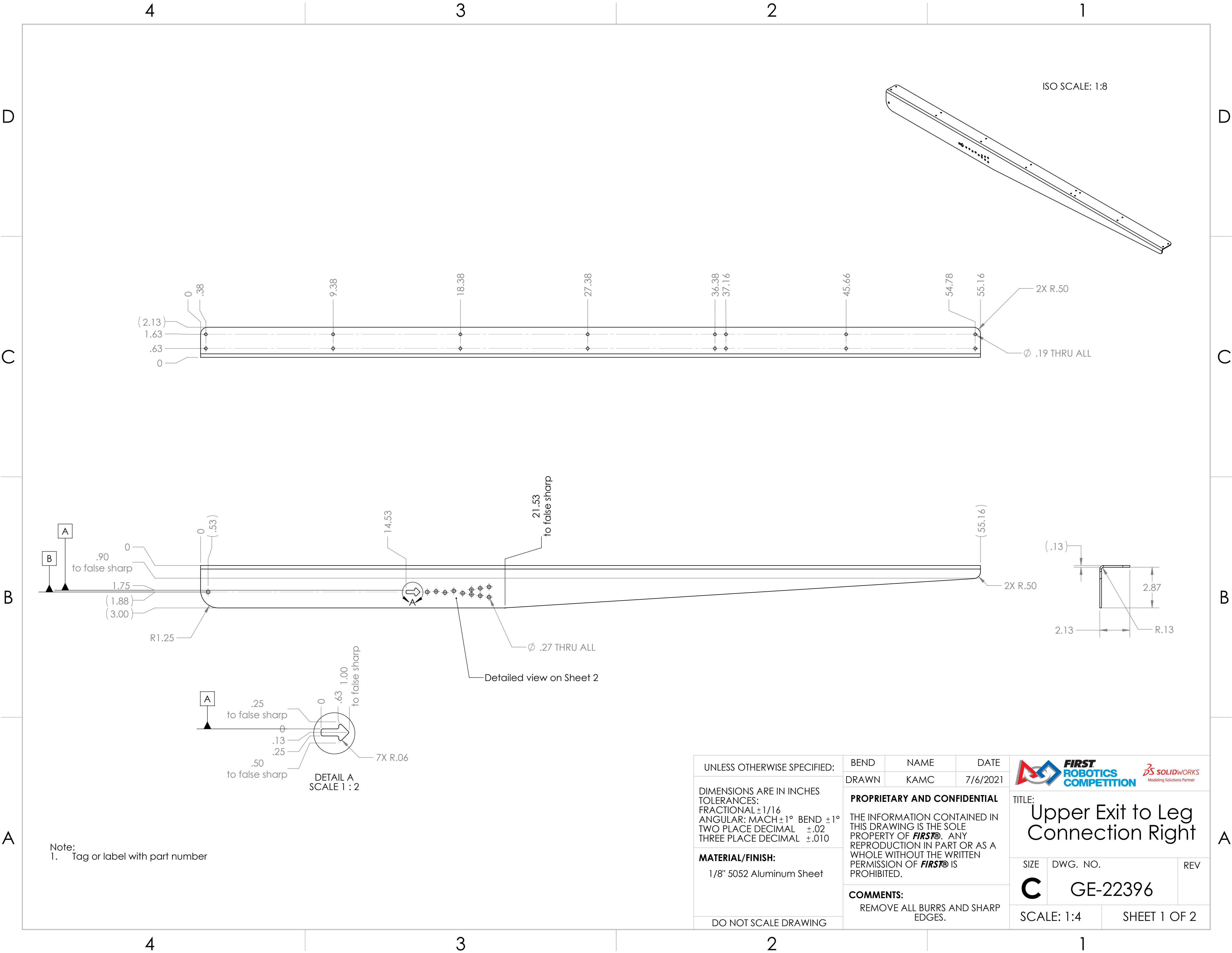
GE-22395

SCALE: 1:4

SHEET 2 OF 2



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div> <div>TITLE: Upper Exit Base Channel</div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			SIZE DWG. NO. REV C GE-22395-01		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:4 SHEET 1 OF 1		
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet						
DO NOT SCALE DRAWING						



ISO SCALE: 1:8

2X R.50

Ø .19 THRU ALL

2X R.50



R.13

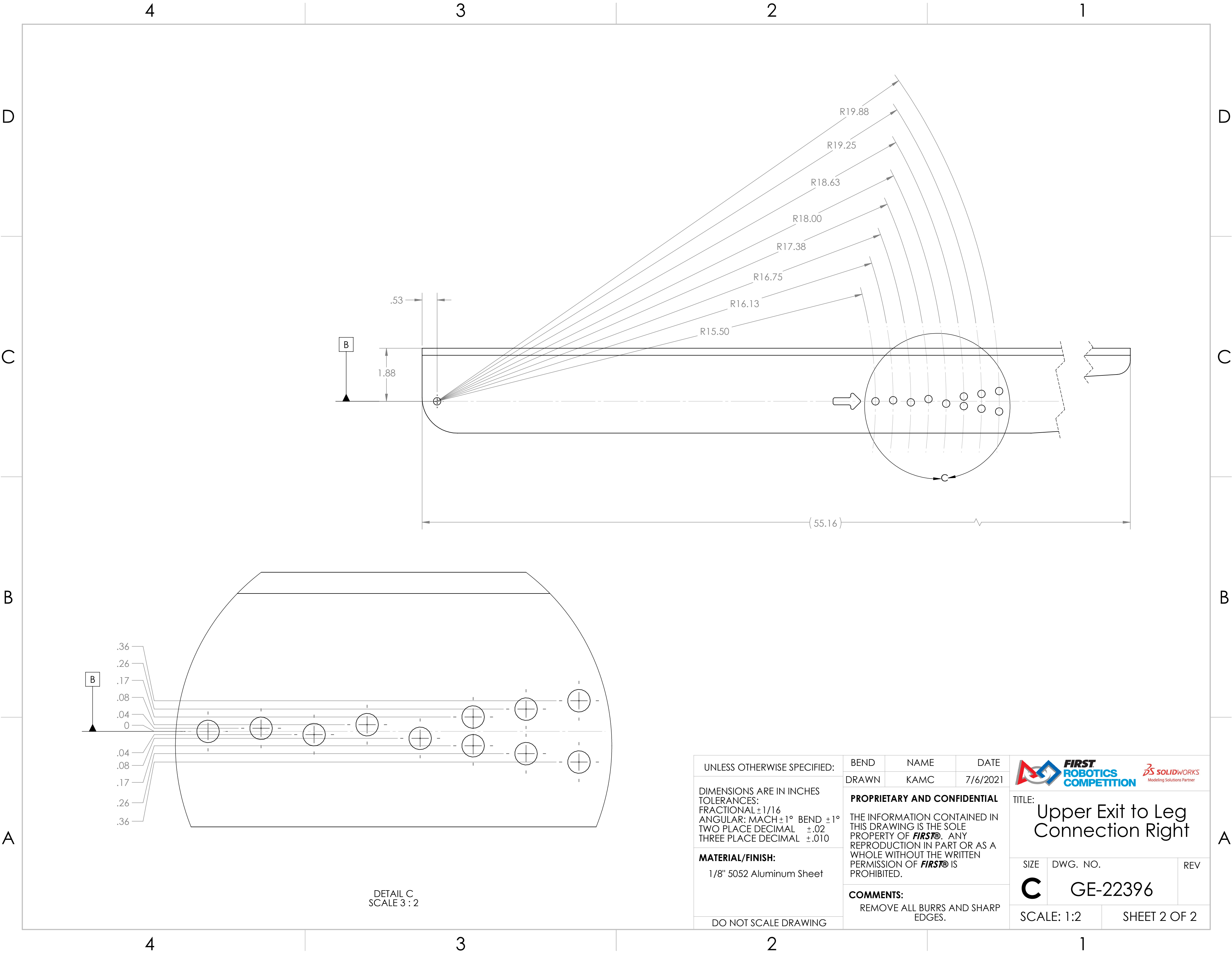
Ø .27 THRU ALL



Detailed view on Sheet 2

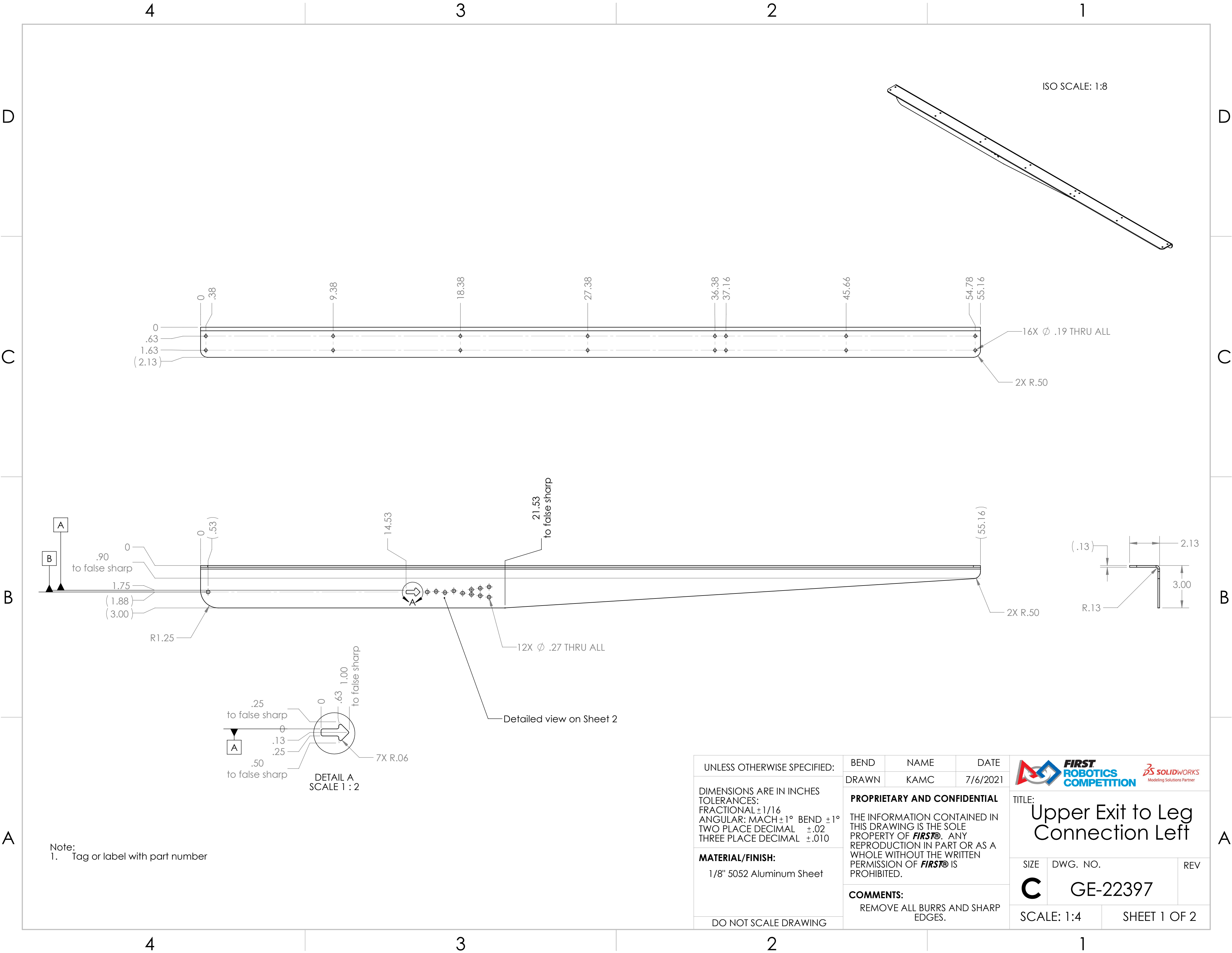
DETAIL A
SCALE 1 : 2

Note:
1. Tag or label with part number

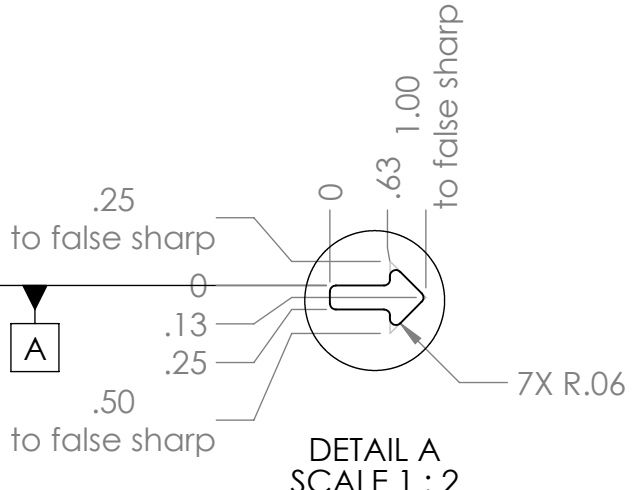
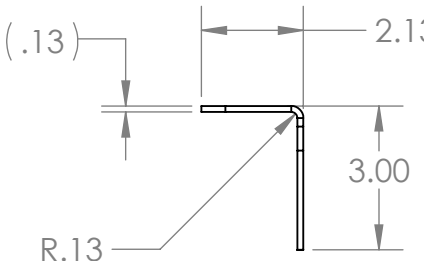
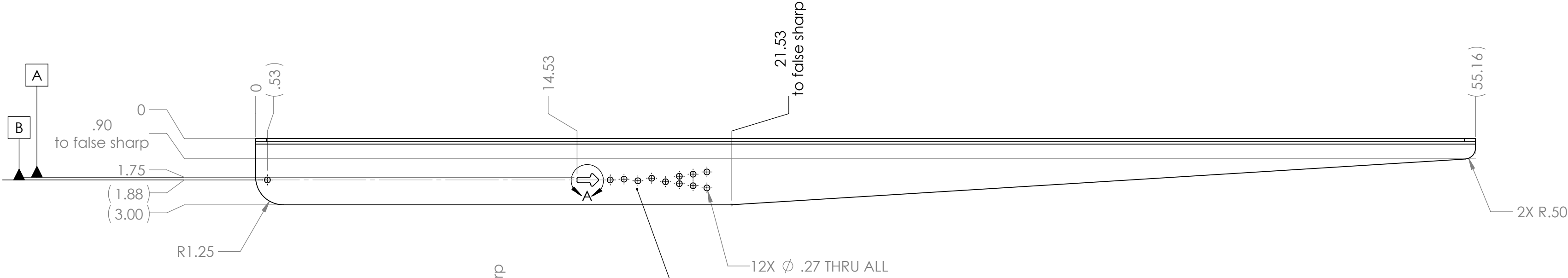
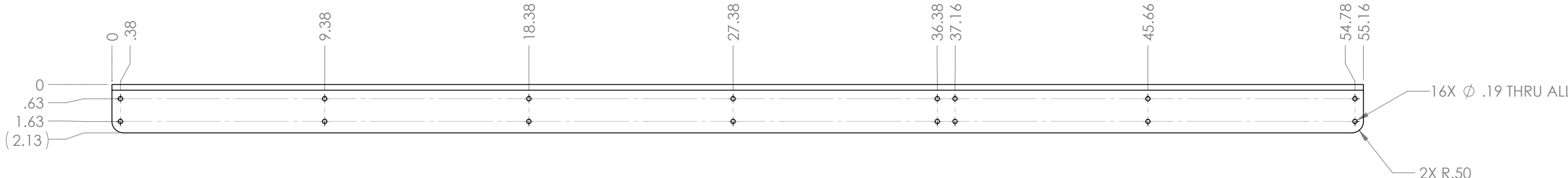
UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE: <div>Upper Exit to Leg Connection Right</div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22396	
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 2



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	KAMC	7/6/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST ® IS PROHIBITED.			Upper Exit to Leg Connection Right		
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22396	
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 2 OF 2





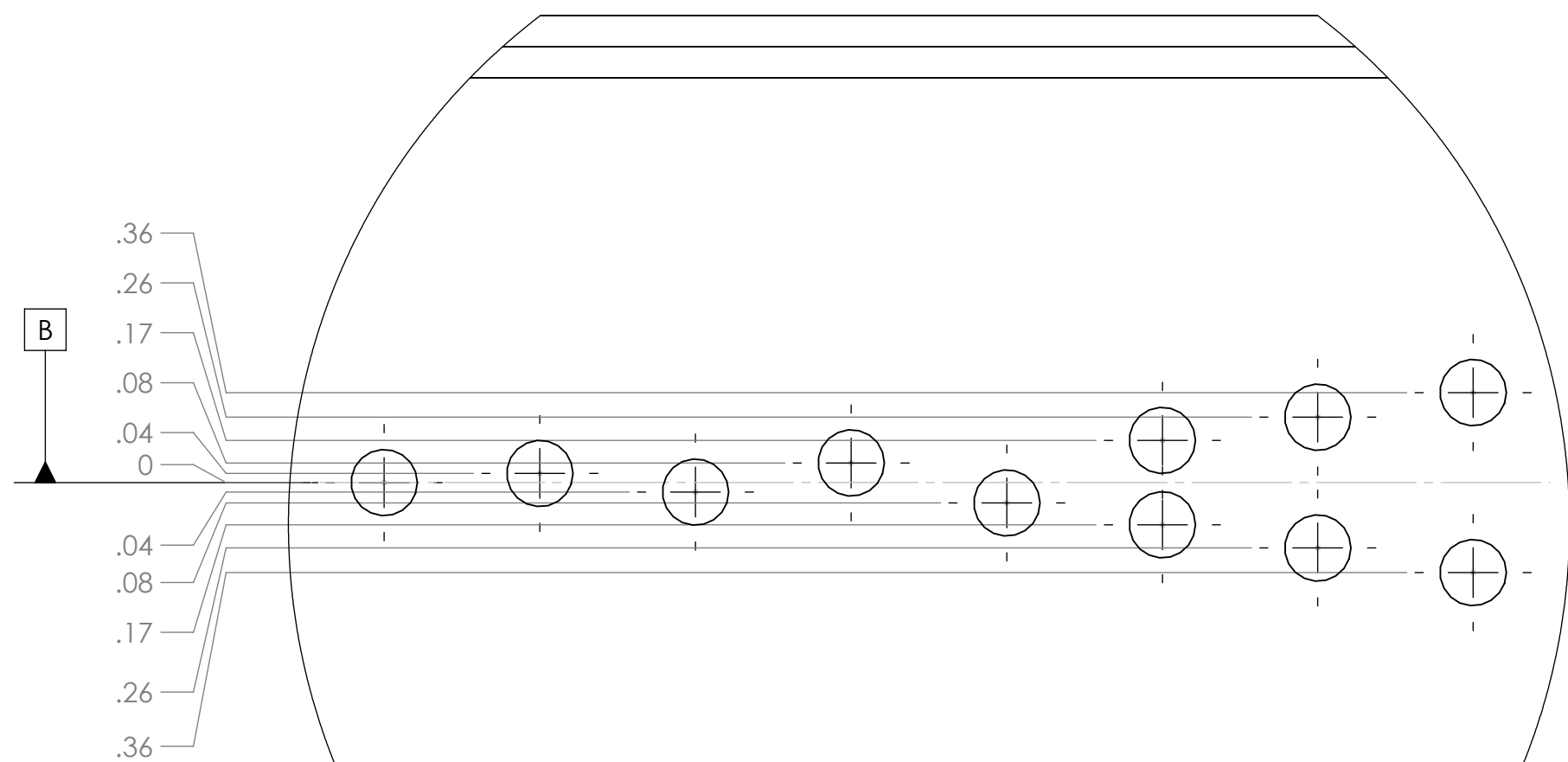
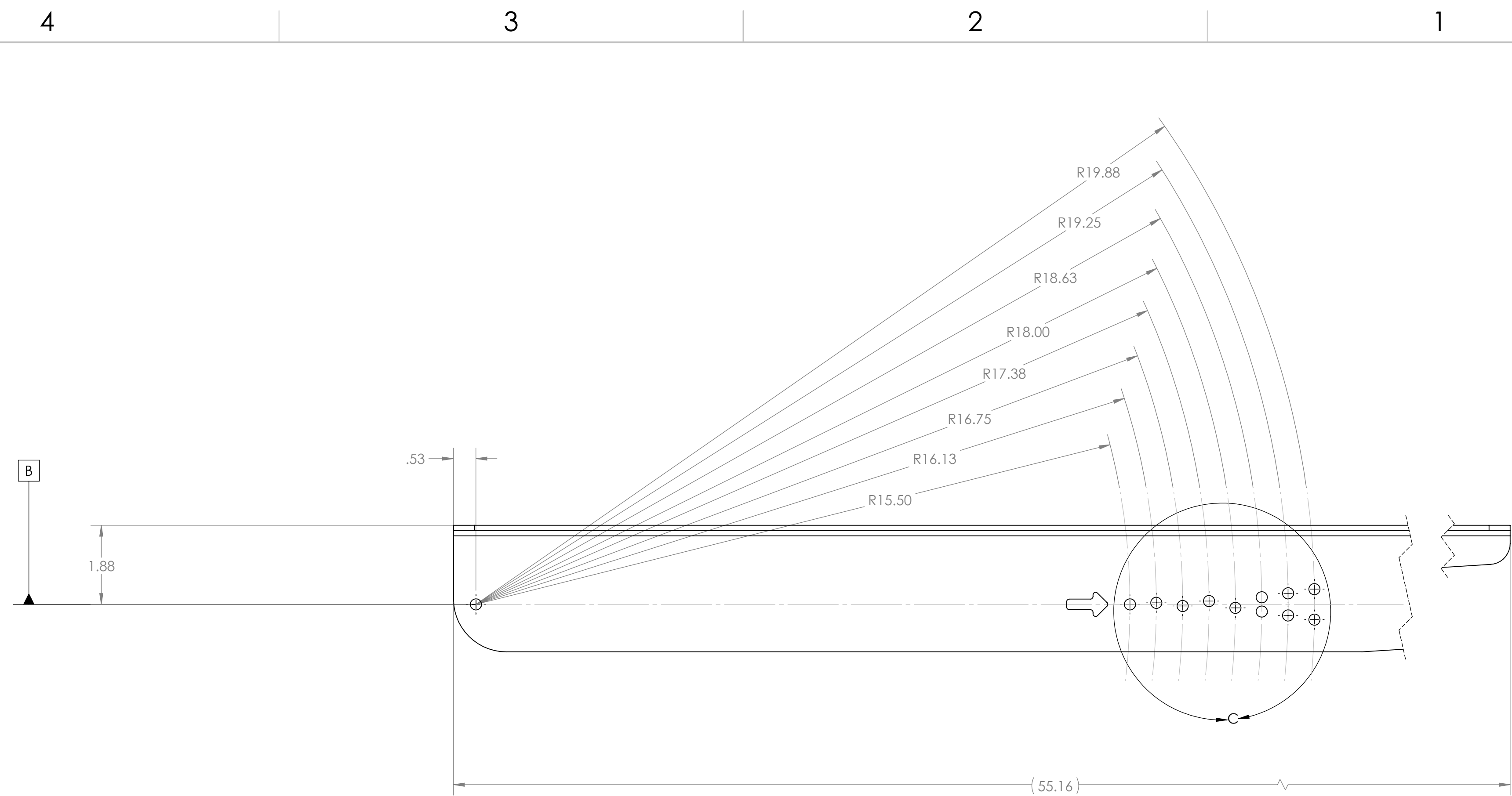
ISO SCALE: 1:8





Note:
1. Tag or label with part number

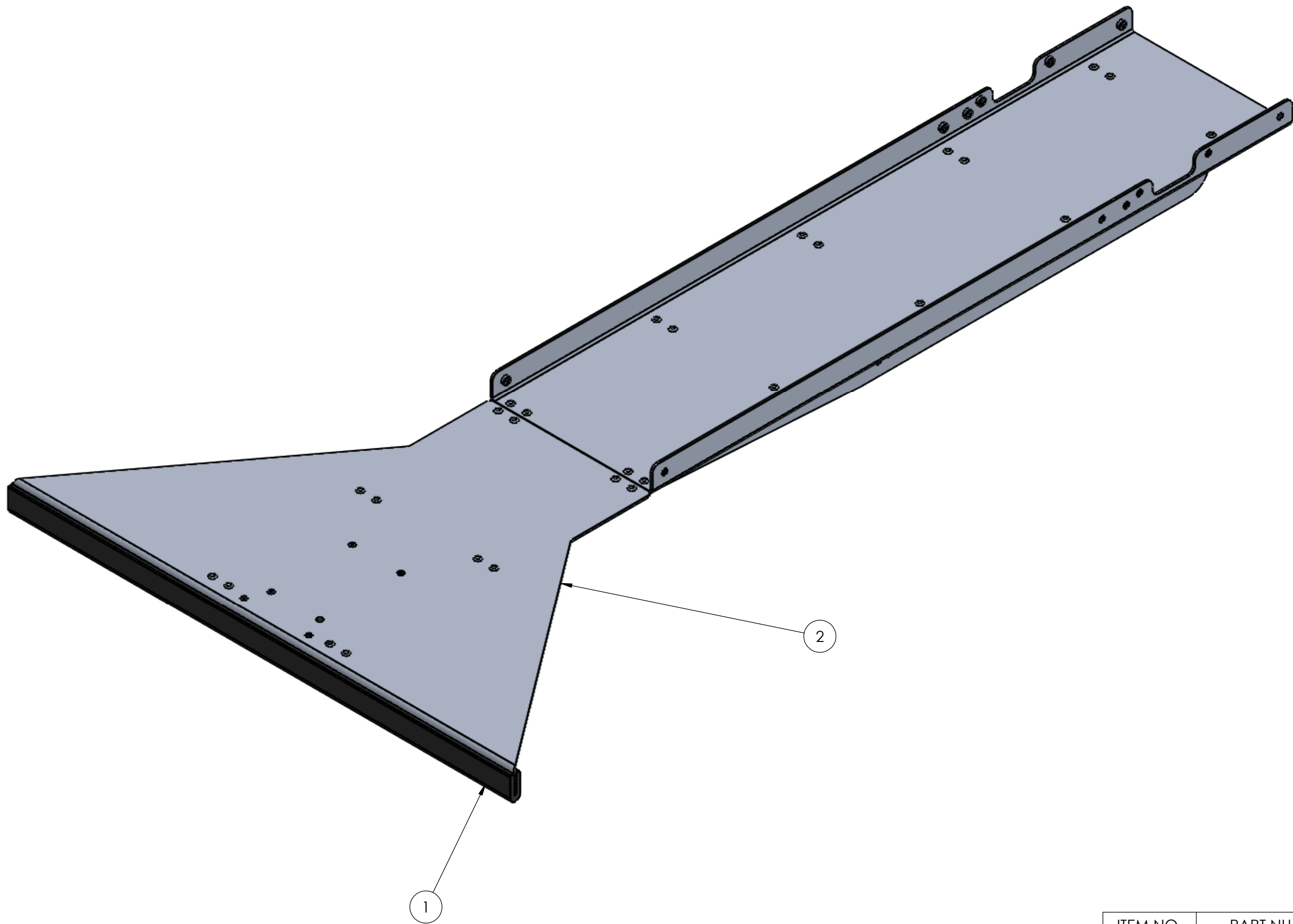
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	KAMC	7/6/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Upper Exit to Leg Connection Left		
SIZE C	DWG. NO. GE-22397	REV
SCALE: 1:4		SHEET 1 OF 2



DETAIL C
SCALE 3 : 2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet DO NOT SCALE DRAWING	BEND	NAME	DATE	 	
	DRAWN	KAMC	7/6/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Upper Exit to Leg Connection Left	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22397
			SCALE: 1:2		SHEET 2 OF 2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22401	Upper Exit Foam Edge	1
2	GE-22405	Upper Exit Riveted Assembly	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Upper Exit Sheet Metal with Foam

SIZE	DWG. NO.	REV
C	GE-22406	

SCALE: 1:4 SHEET 1 OF 2

4

D

C

B

A

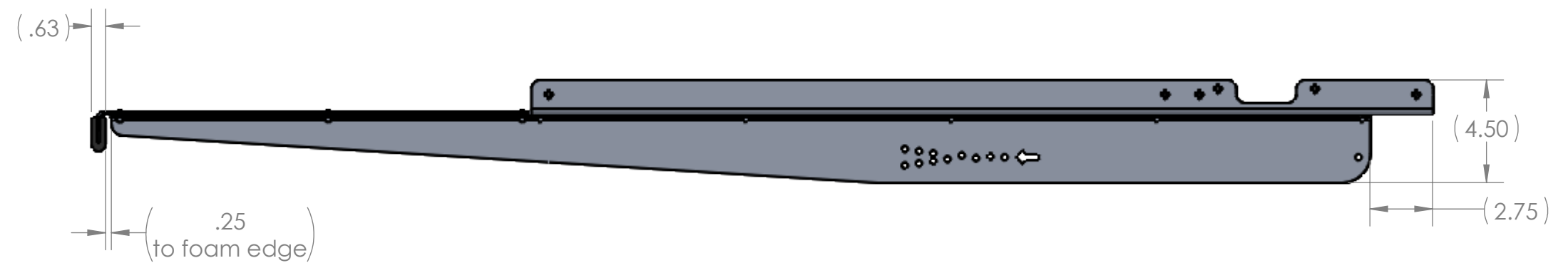
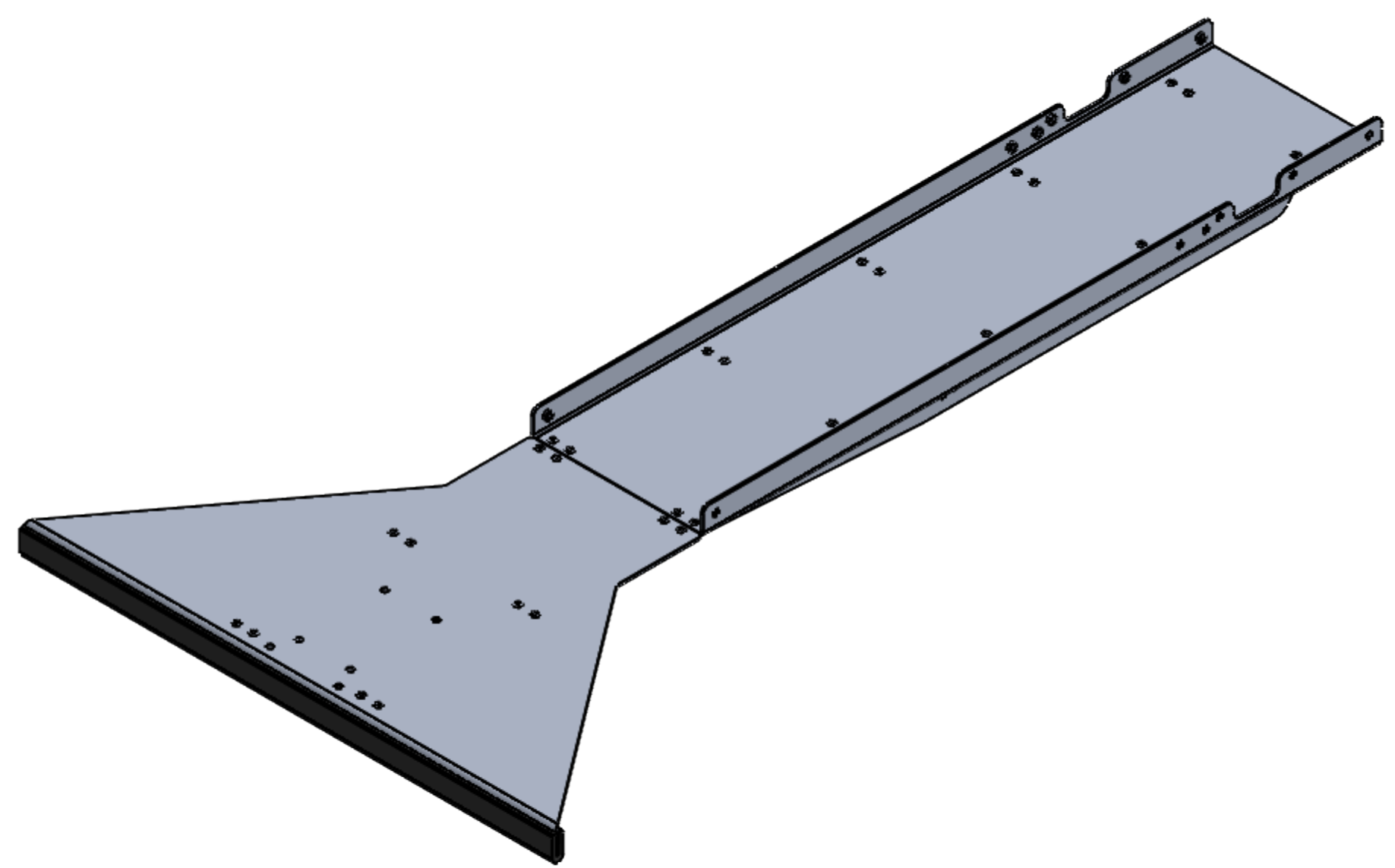
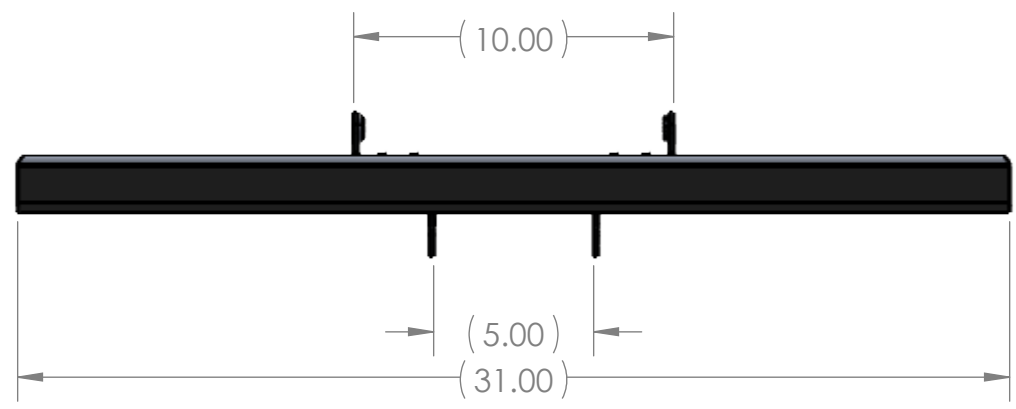
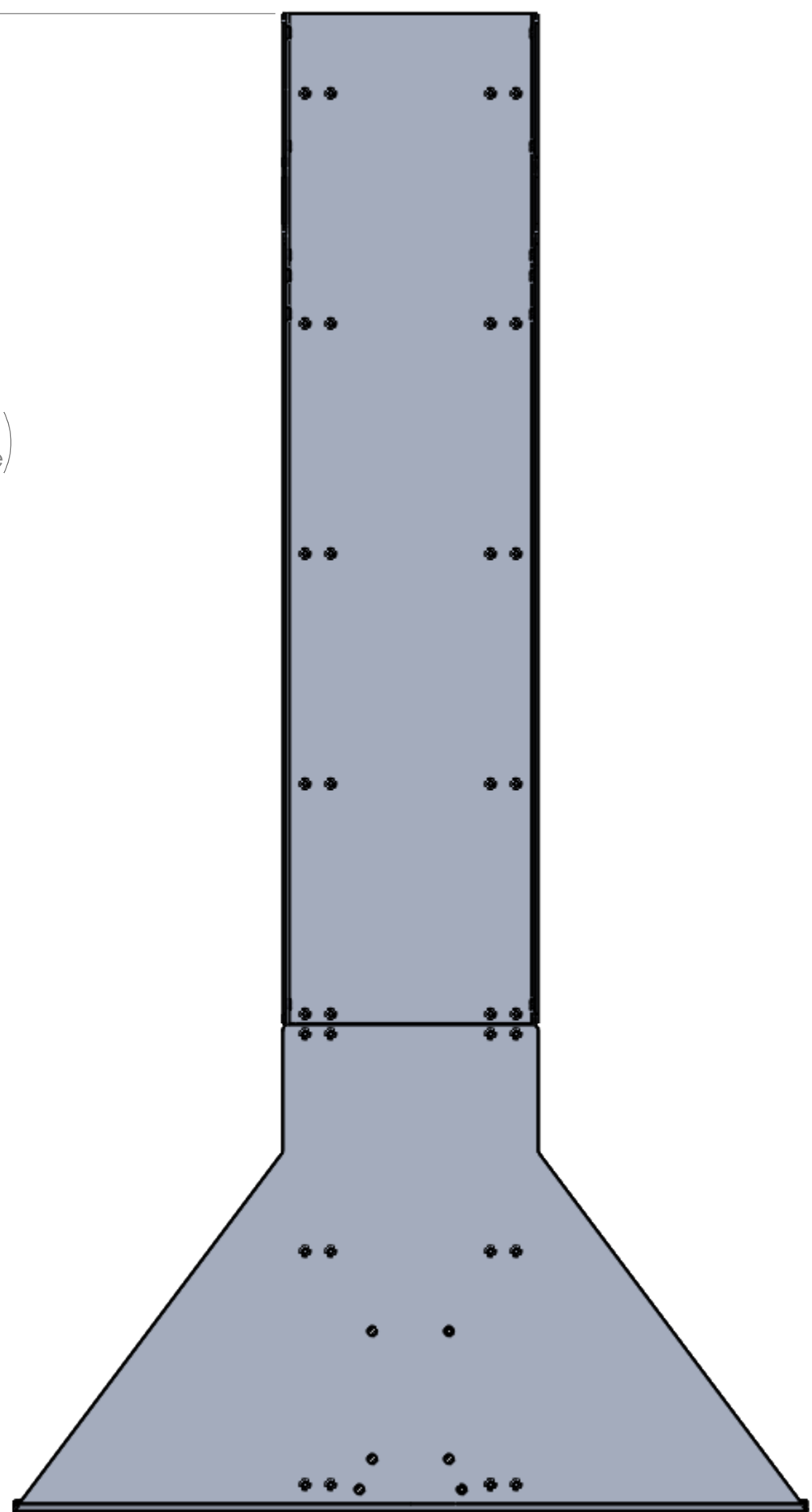
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3

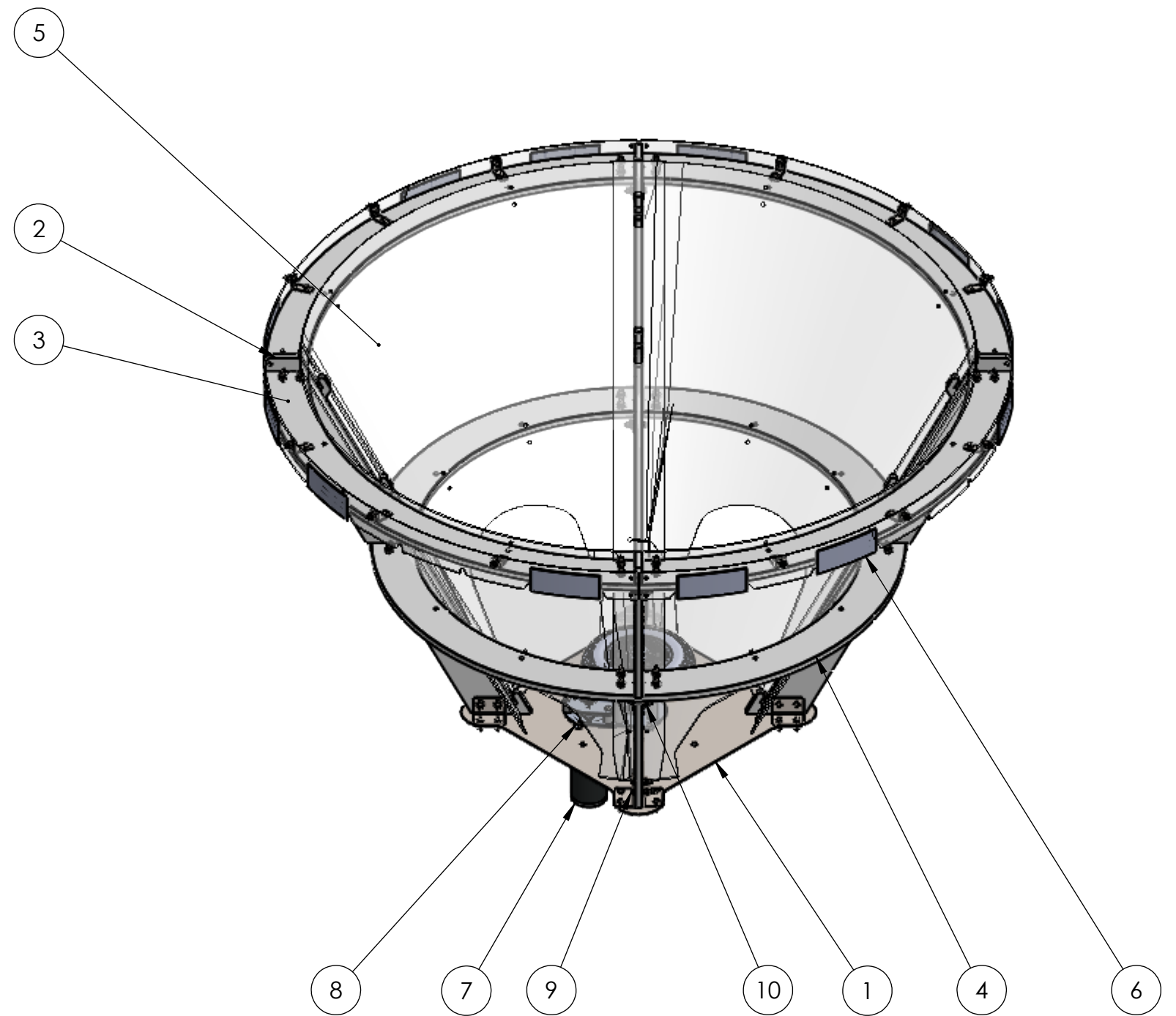
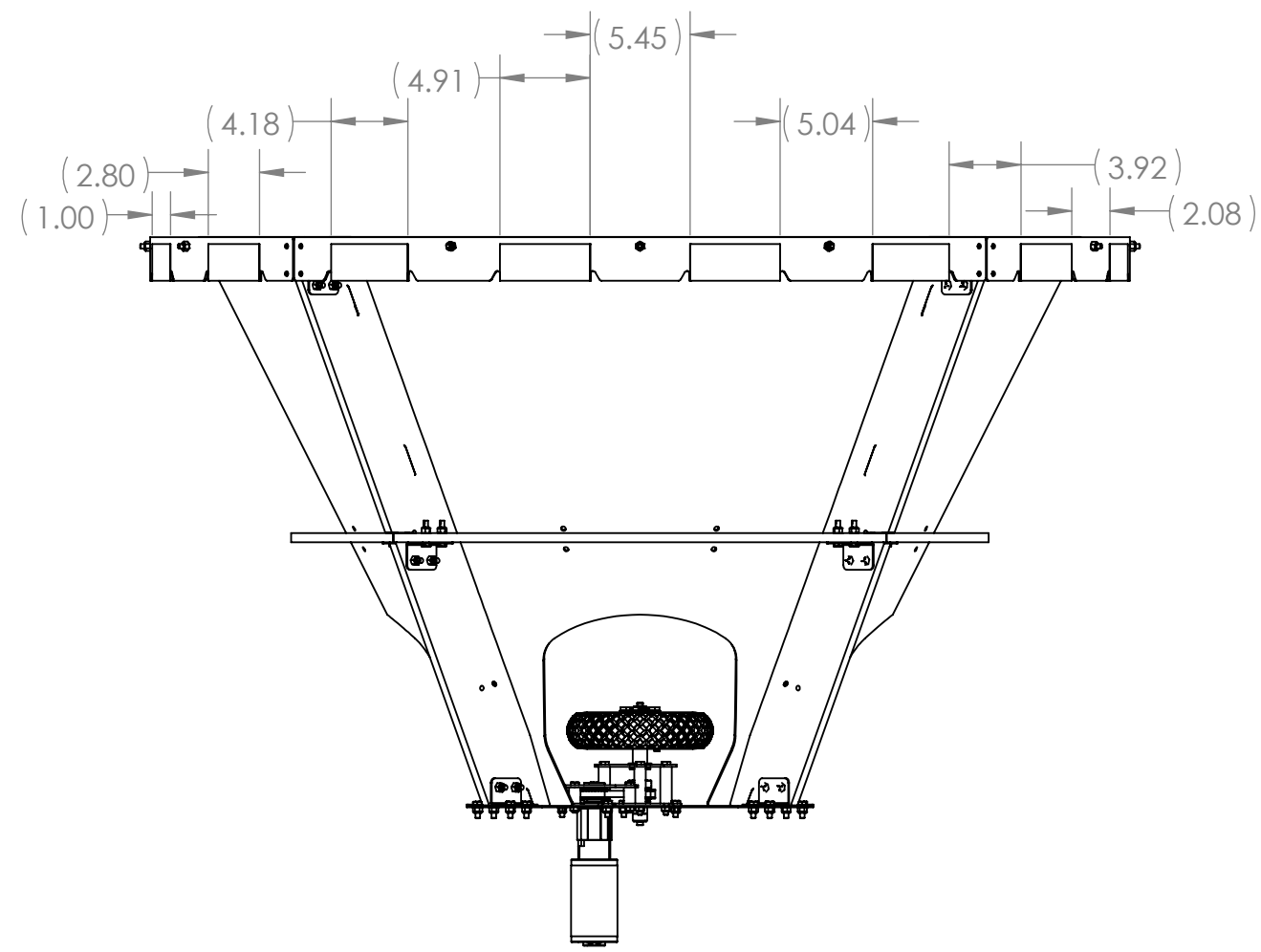
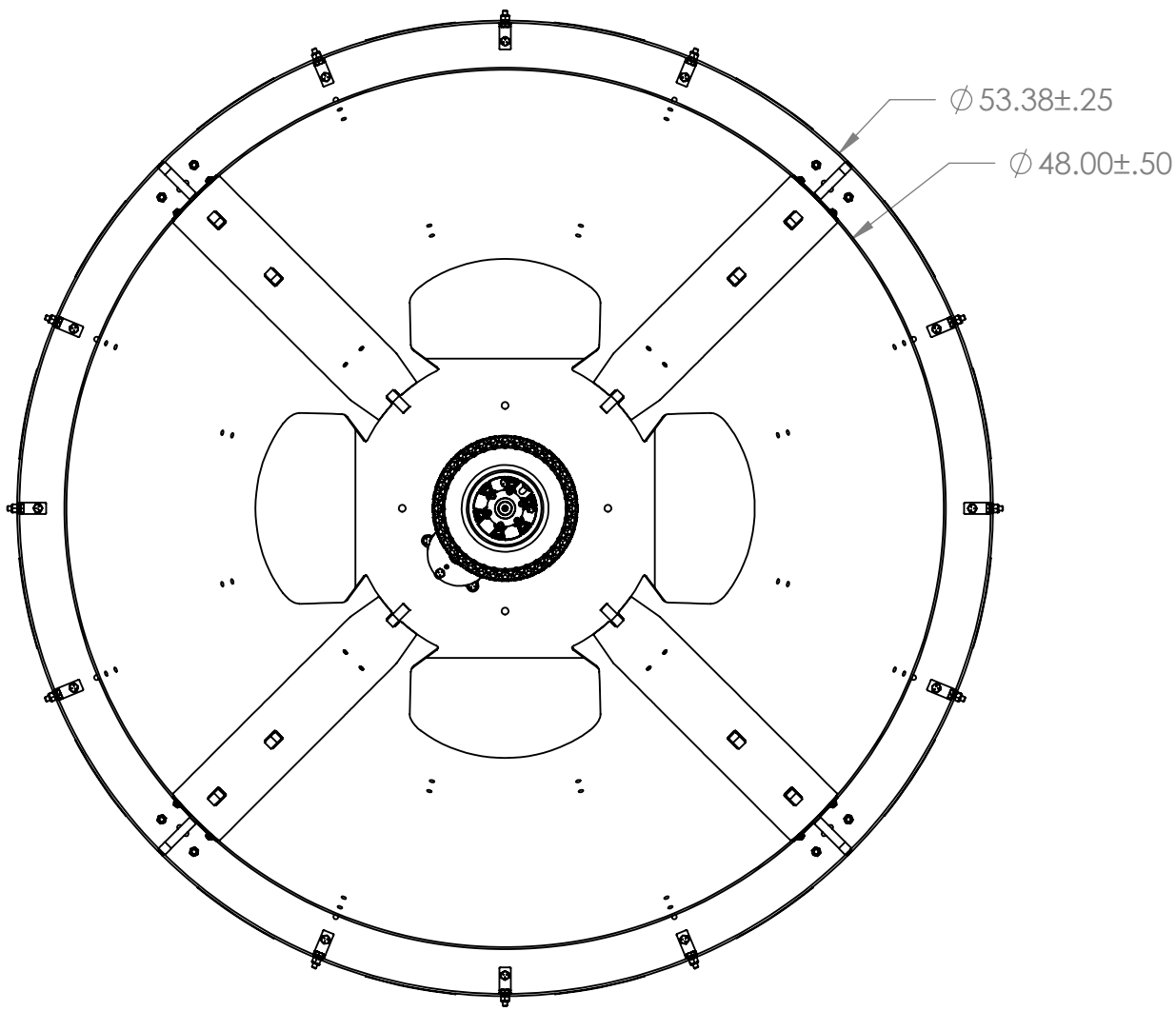
2

1

58.78
(to foam edge)



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	KAMC	7/6/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Upper Exit Sheet Metal with Foam	
			SIZE	DWG. NO.	REV
			C	GE-22406	
			SCALE: 1:6		SHEET 2 OF 2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22413	Upper Hub Baseplate Assembly	1
2	GE-22414	Upper Hub Vertical Rib	4
3	GE-22416	Upper Hub Large Rib Assembly	4
4	GE-22418	Upper Hub Small Rib Assembly	4
5	GE-22419	Upper Hub Panel	4
6	GE-22420	Upper Hub Vision Assembly	4
7	GE-22432	High Agitator Assembly	1
8	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
9	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	36
10	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	40
11	washer_flat_.25	Flat Washer for 1/4" Screw	12

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/2$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

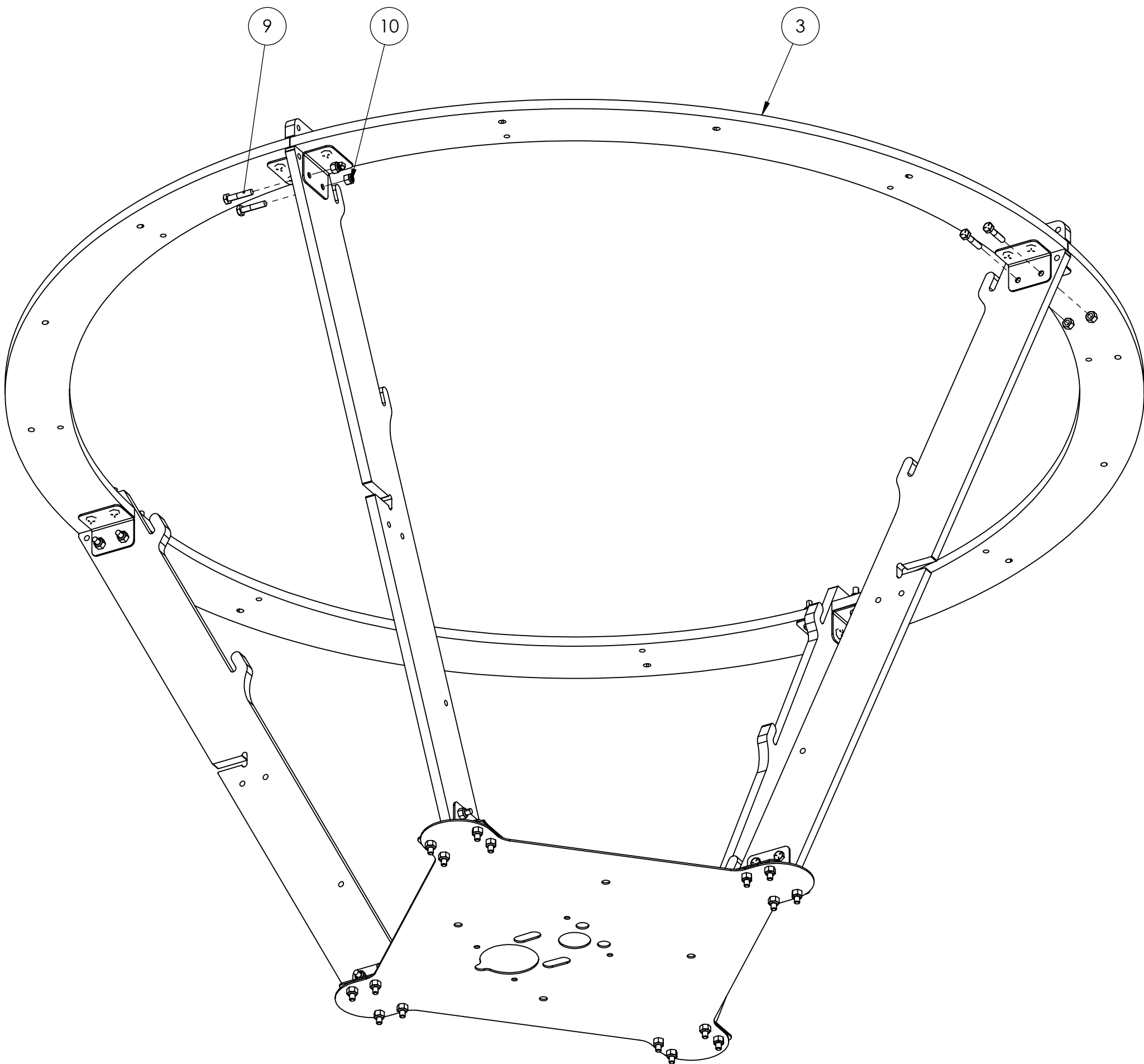
DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	CO	12/16/2021
PROPRIETARY AND CONFIDENTIAL		
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:		
REMOVE ALL BURRS AND SHARP EDGES.		





TITLE: Upper Hub		
SIZE C	DWG. NO. GE-22411	REV
SCALE: 1:10		SHEET 1 OF 4

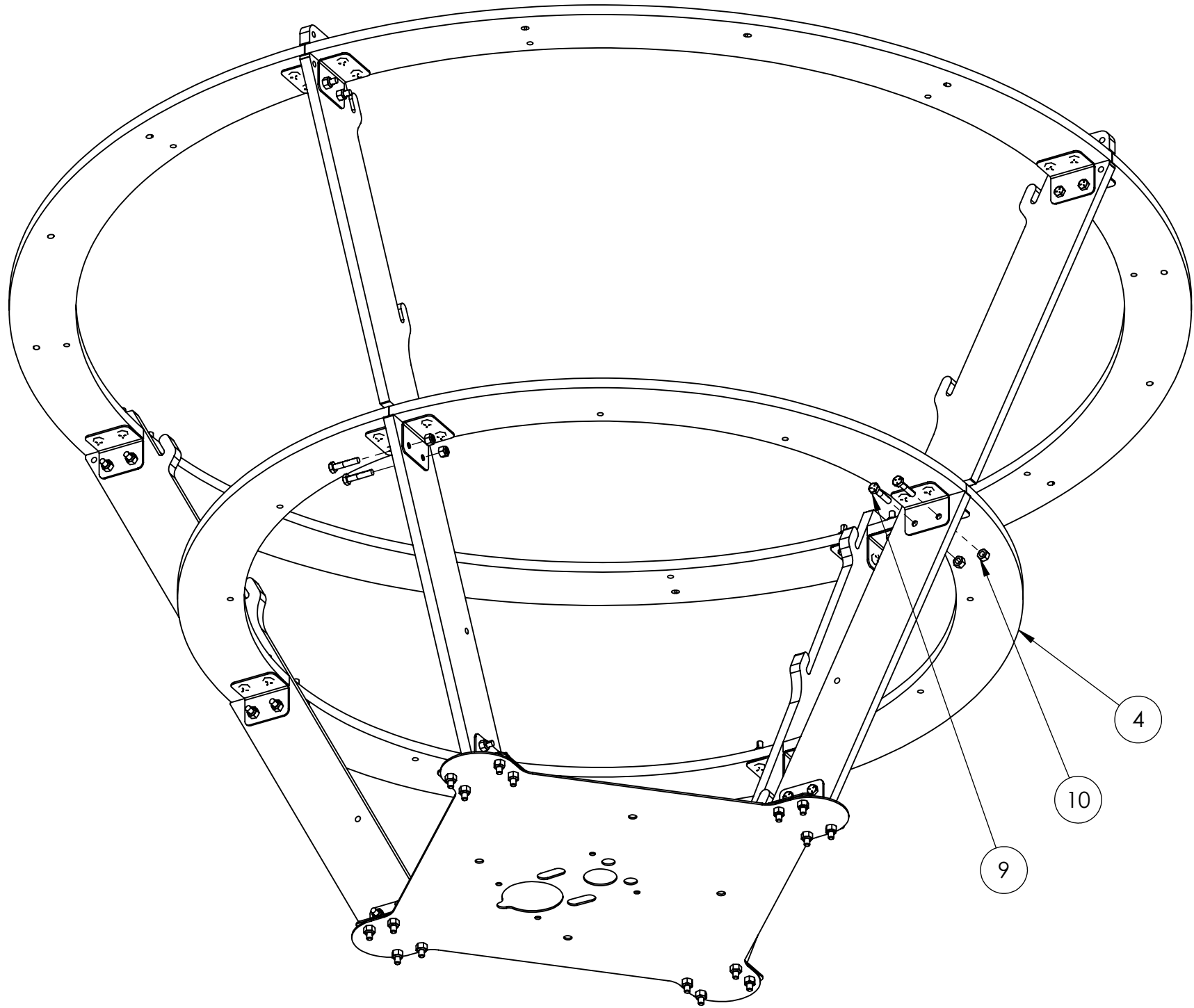
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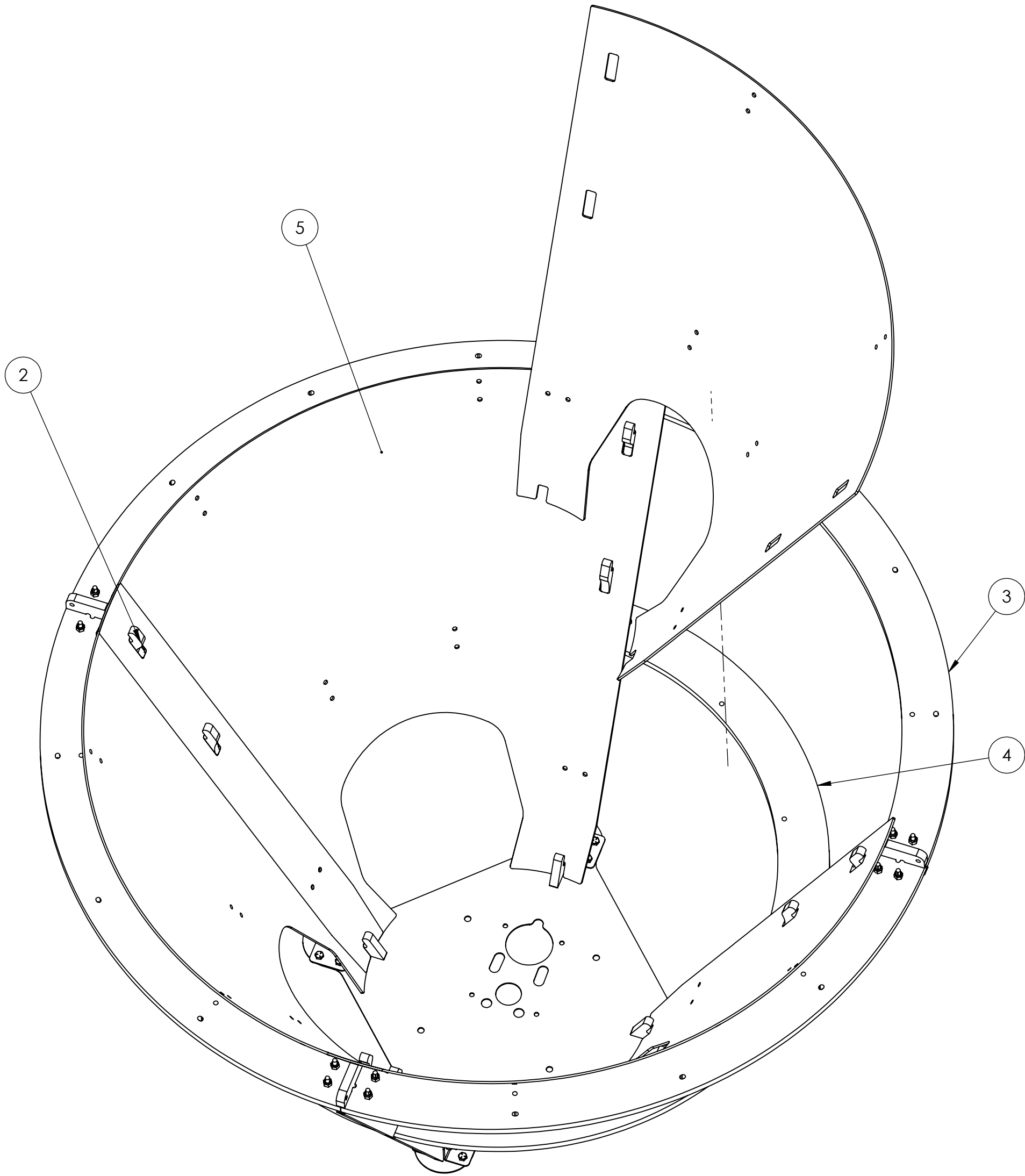
Notes:

1. Attach (3) to the assembly using (9) and (10).



UNLESS OTHERWISE SPECIFIED:		FIELD		NAME		DATE	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		DRAWN		CO		12/16/2021	
		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:		 					
DO NOT SCALE DRAWING							
		TITLE: Upper Hub					
		SIZE		DWG. NO.			REV
		C		GE-22411			
		SCALE: 1:5			SHEET 2 OF 4		



- Notes:
- Attach 4 to assembly using 9 and 10.



- Notes:
- Insert all 5 into the assembly, bending and aligning with the hooks on 2.
 - Cable tie 5 to 2, 3, and 4.

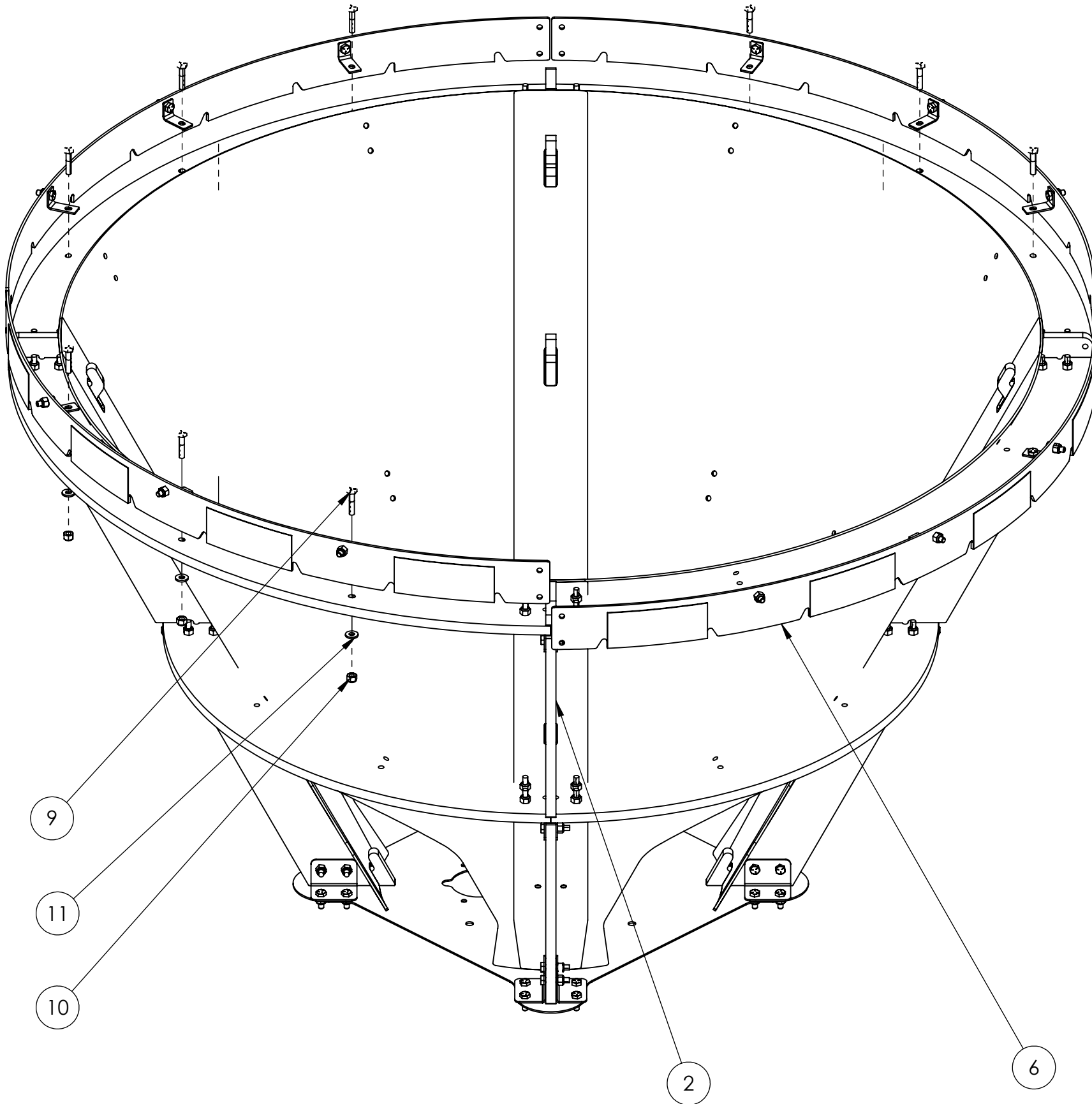
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
	DRAWN	CO	12/16/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Upper Hub		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
C				GE-22411		
DO NOT SCALE DRAWING				SCALE: 1:6		SHEET 3 OF 4

D

C

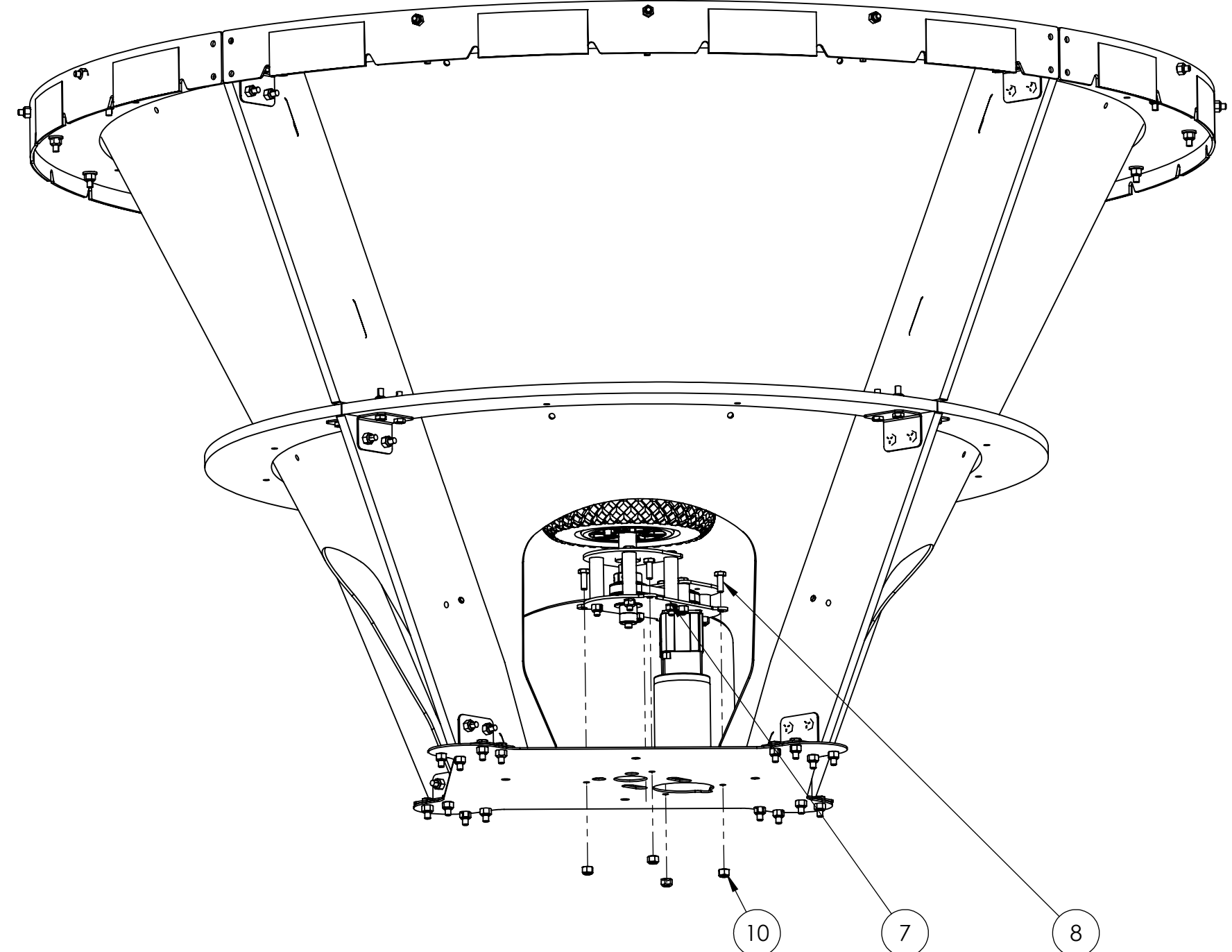
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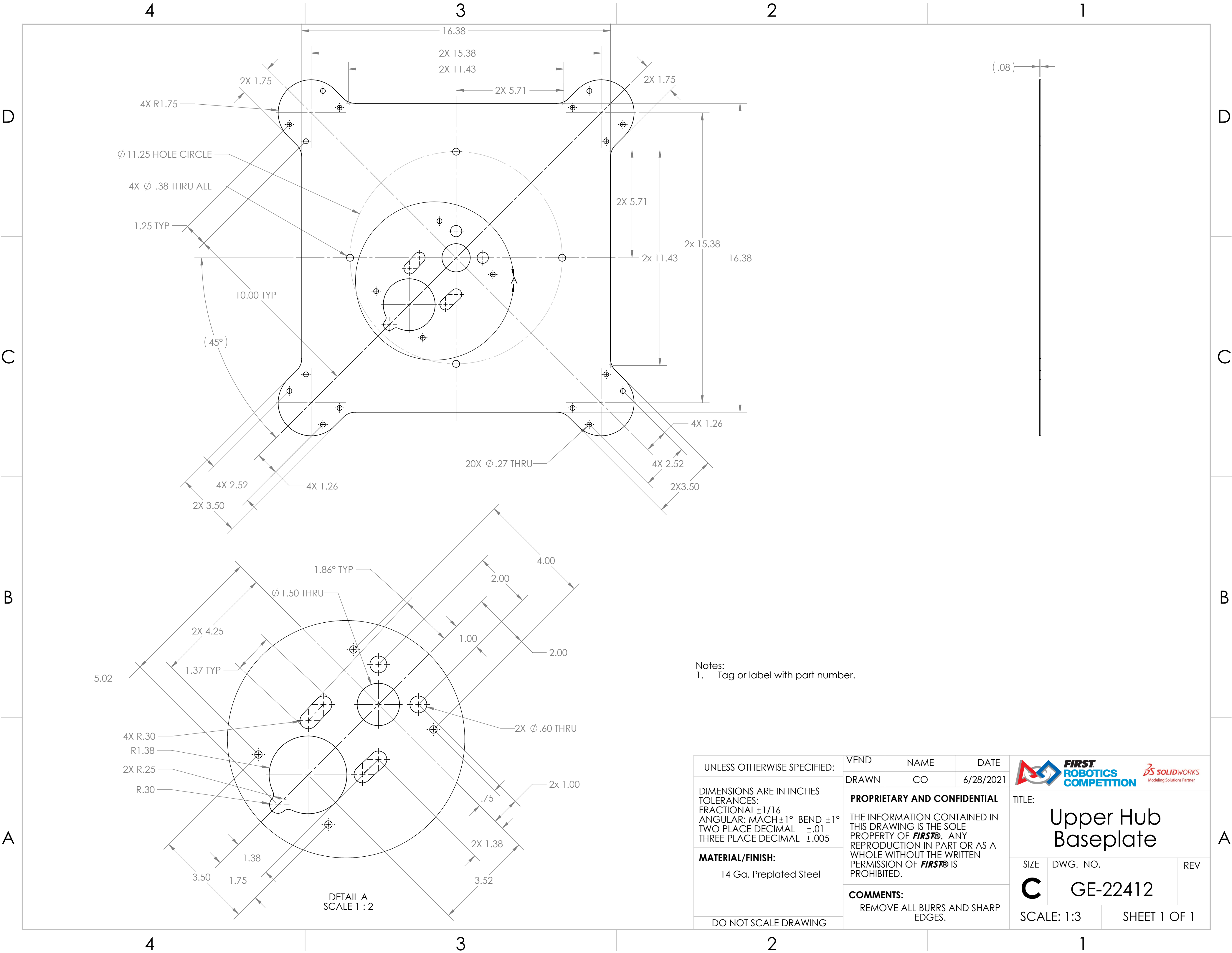


- Notes:
1. Attach (6) to assembly using (9), (11), and (10) as shown.
 2. Cable tie adjacent (6)'s to each other and (2).

- Notes:
1. Attach (7) to assembly using (8) and (10).



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50 MATERIAL/FINISH: DO NOT SCALE DRAWING	FIELD	NAME	DATE	<div></div> <div>TITLE: Upper Hub</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div><div>GE-22411</div></div> <div>SCALE: 1:6</div> <div>SHEET 4 OF 4</div>		
	DRAWN	CO	12/16/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.						



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
14 Ga. Preplated Steel

DO NOT SCALE DRAWING

VEND

DRAWN

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

NAME

CO

DATE

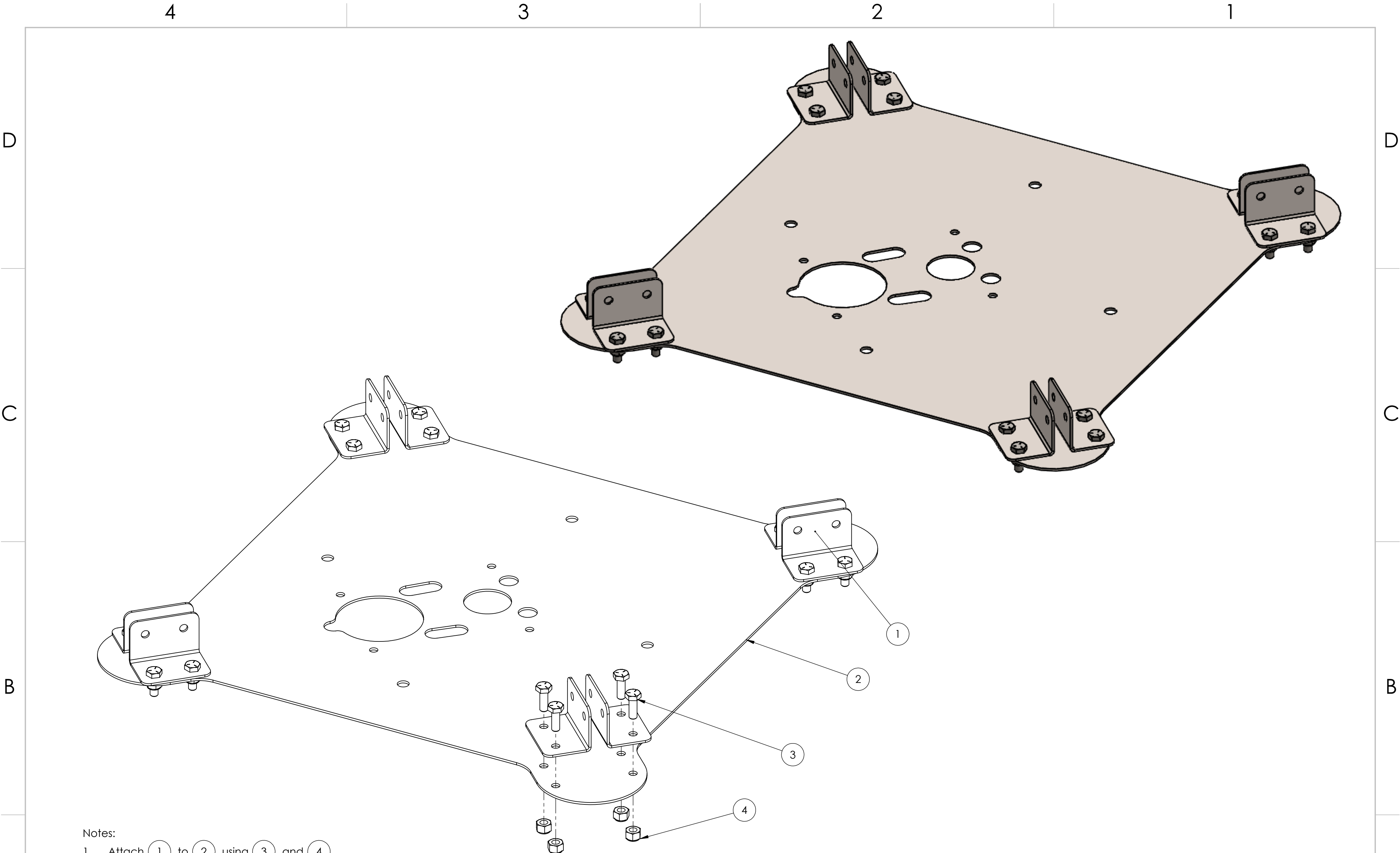
6/28/2021



TITLE:
Upper Hub Baseplate

SIZE	DWG. NO.	REV
C	GE-22412	



SCALE: 1:3 SHEET 1 OF 1

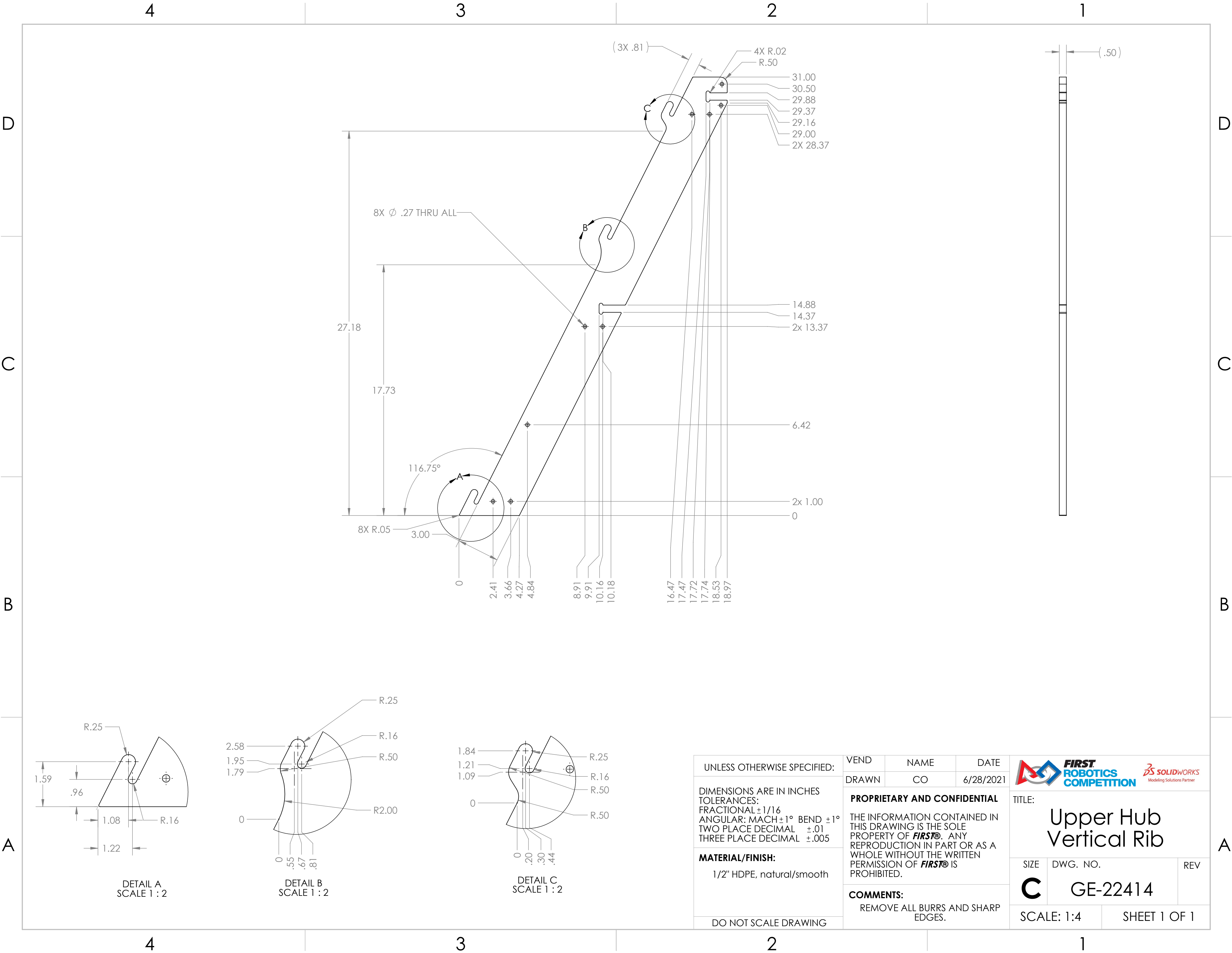


Notes:
1. Attach (1) to (2) using (3) and (4) .

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bucket	8
2	GE-22412	Upper Hub Baseplate	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	16
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	CO	11/3/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Upper Hub Baseplate Assembly		
SIZE	DWG. NO.	REV
C	GE-22413	
SCALE: 1:2		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$



MATERIAL/FINISH:
1/2" HDPE, natural/smooth

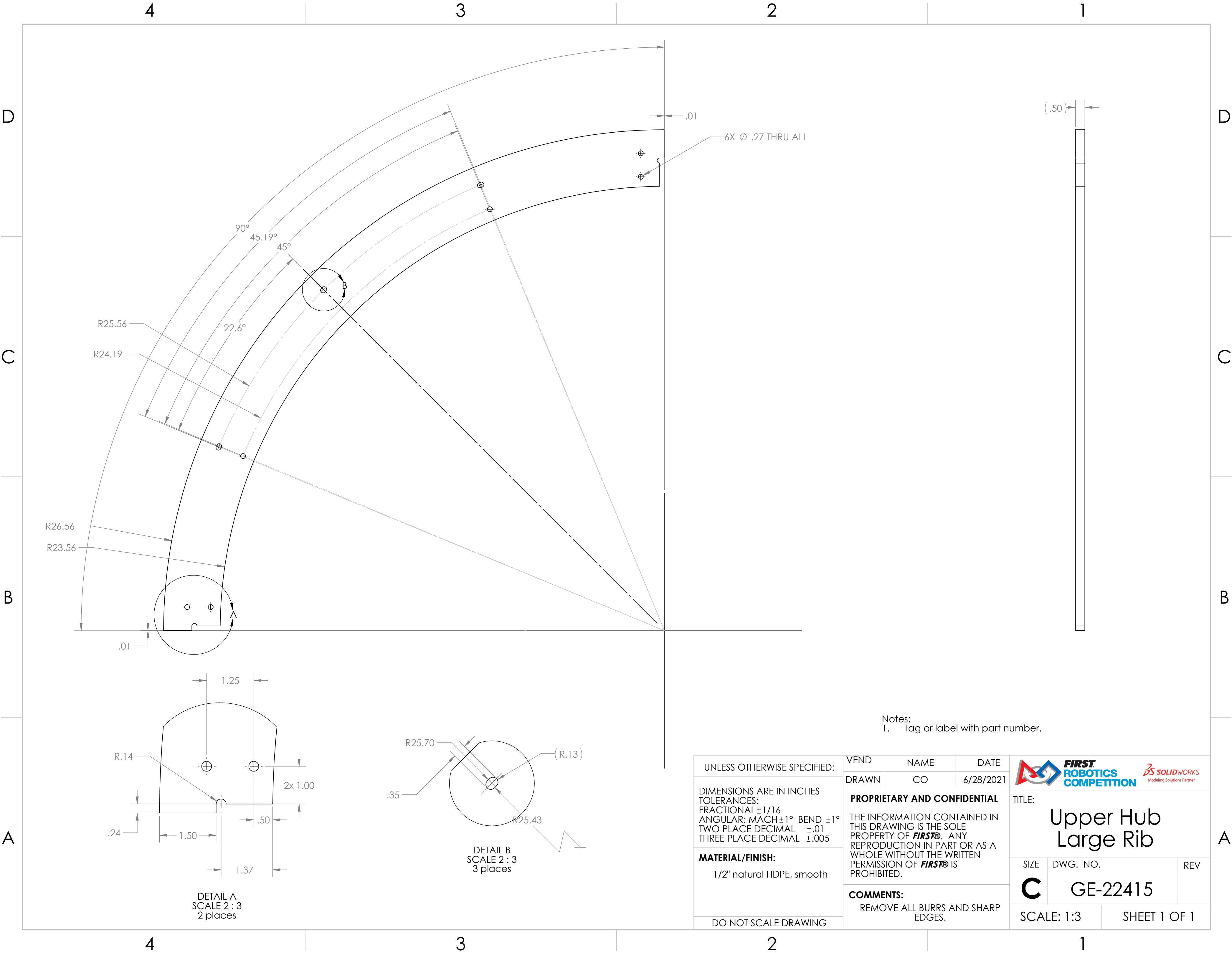
DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/28/2021

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

 		
TITLE: Upper Hub Vertical Rib		
SIZE C	DWG. NO. GE-22414	REV
SCALE: 1:4		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/2" natural HDPE, smooth

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/28/2021

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Upper Hub Large Rib		
SIZE C	DWG. NO. GE-22415	REV
SCALE: 1:3		SHEET 1 OF 1

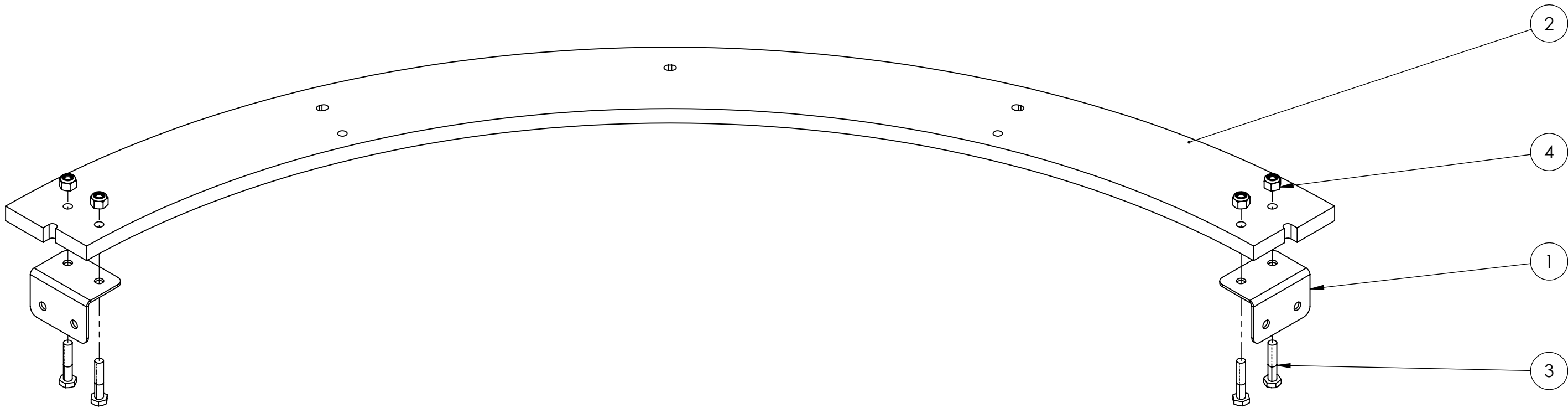
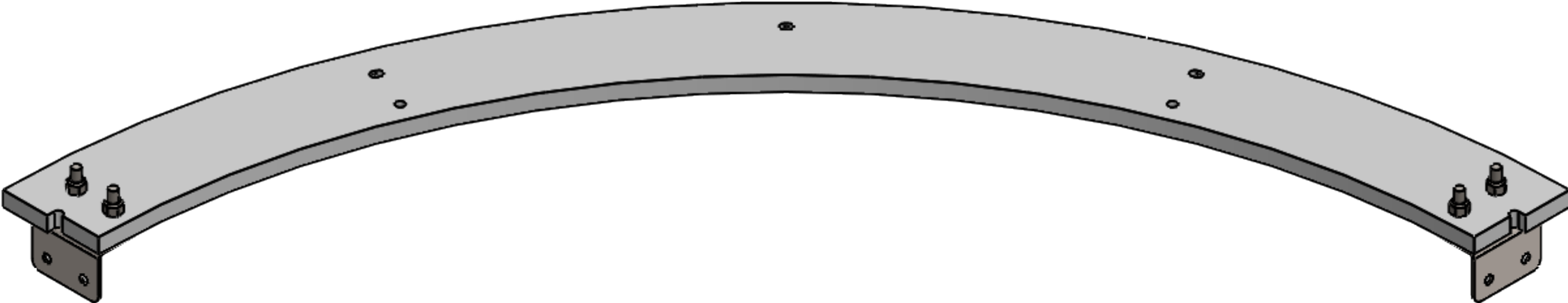
4 3 2 1

D D

C C



B B

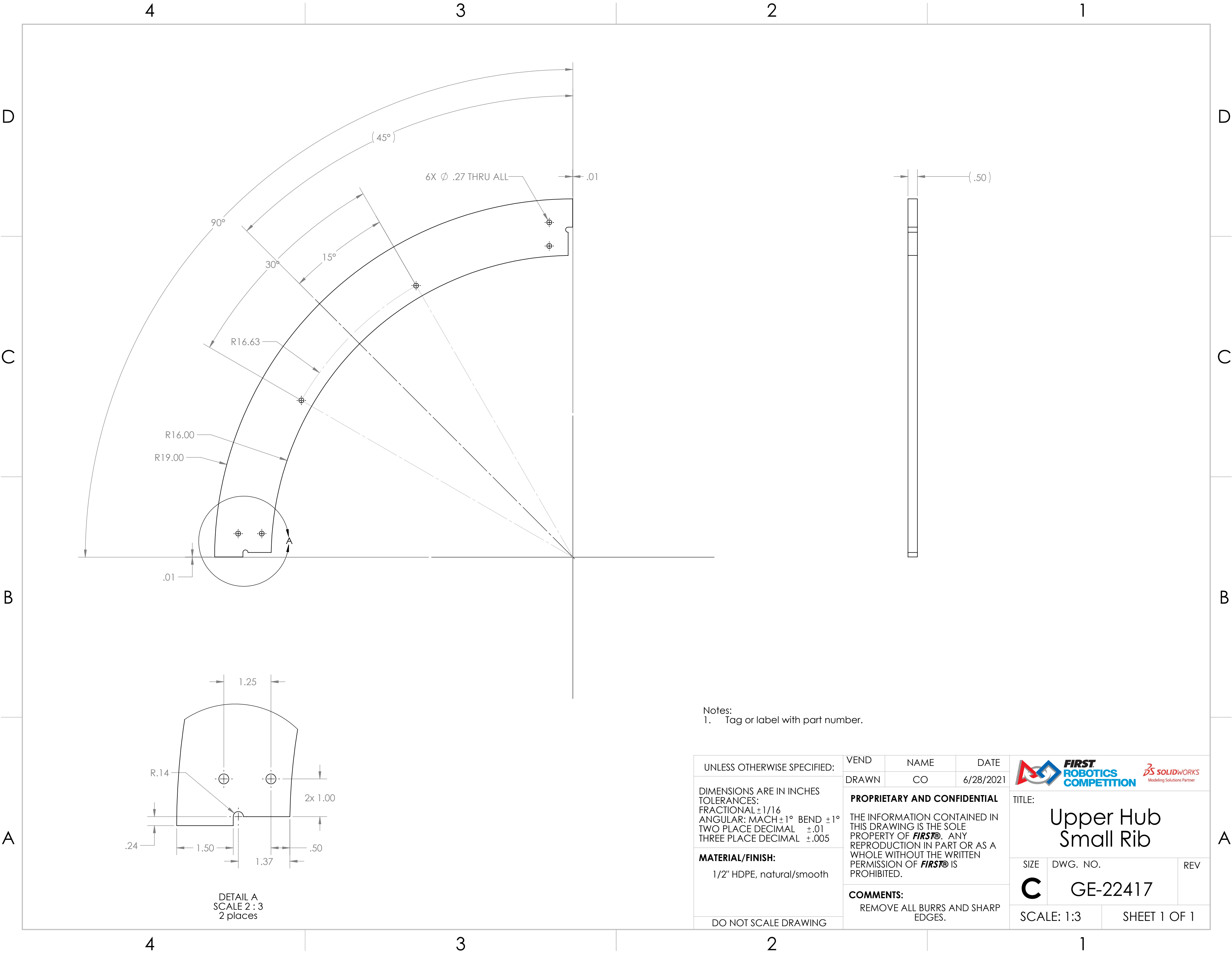
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Notes:
1. Attach (1) to (2) using (3) and (4) .

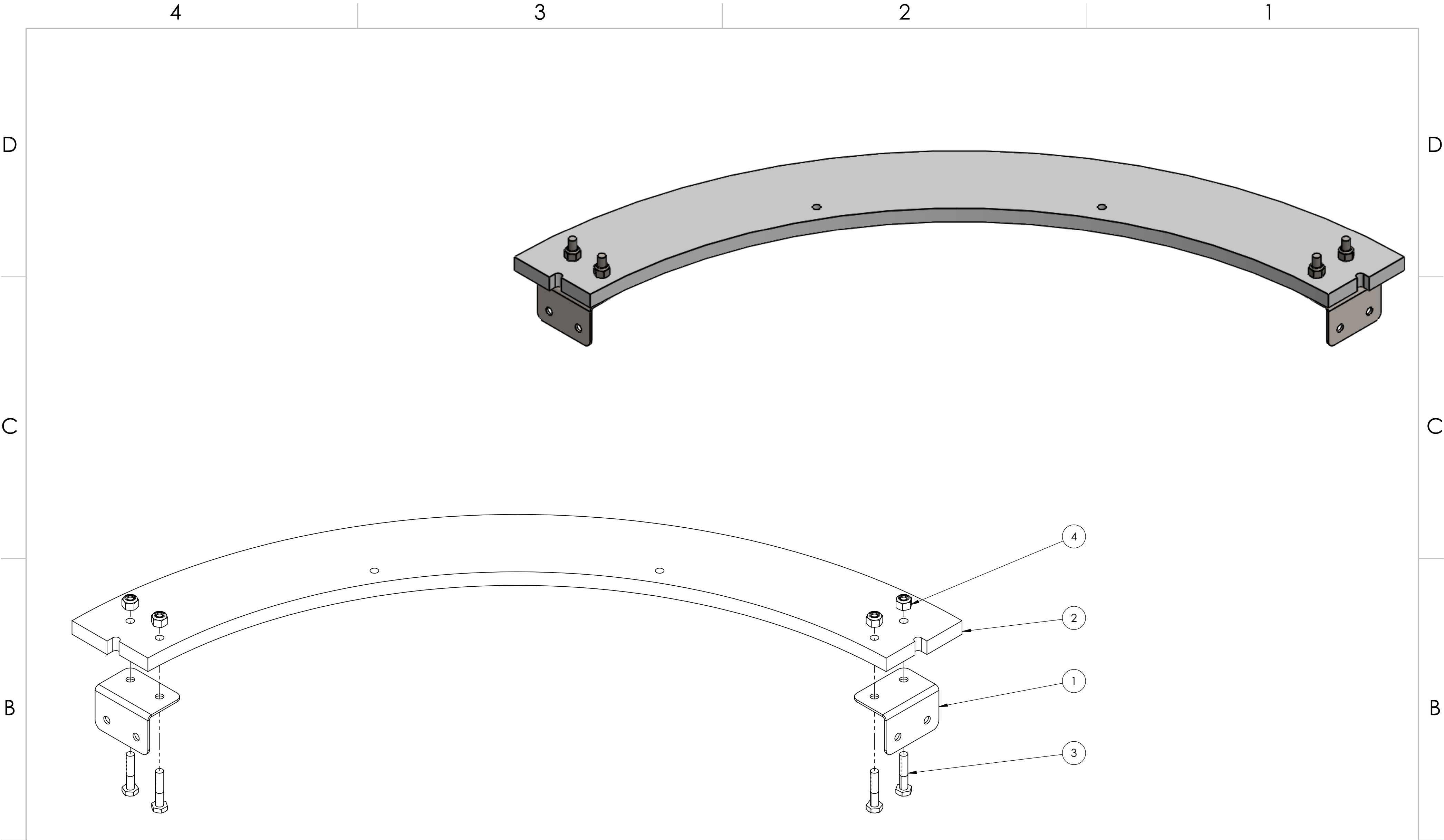
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	2
2	GE-22415	Upper Hub Large Rib	1
3	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	11/3/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Upper Hub Large Rib Assembly	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22416
			SCALE: 1:3		SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	CO	6/28/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE: Upper Hub Small Rib		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	MATERIAL/FINISH: 1/2" HDPE, natural/smooth	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
			C	GE-22417		
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 1



Notes:
1. Attach (1) to (2) using (3) and (4).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	2
2	GE-22417	Upper Hub Small Rib	1
3	hex_.25_20_1.25_parti al	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

DRAWN

NAME

CO

DATE

11/3/2021

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WHOLE WITHOUT THE WRITTEN
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PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE: Upper Hub
Small Rib
Assembly

SIZE

C

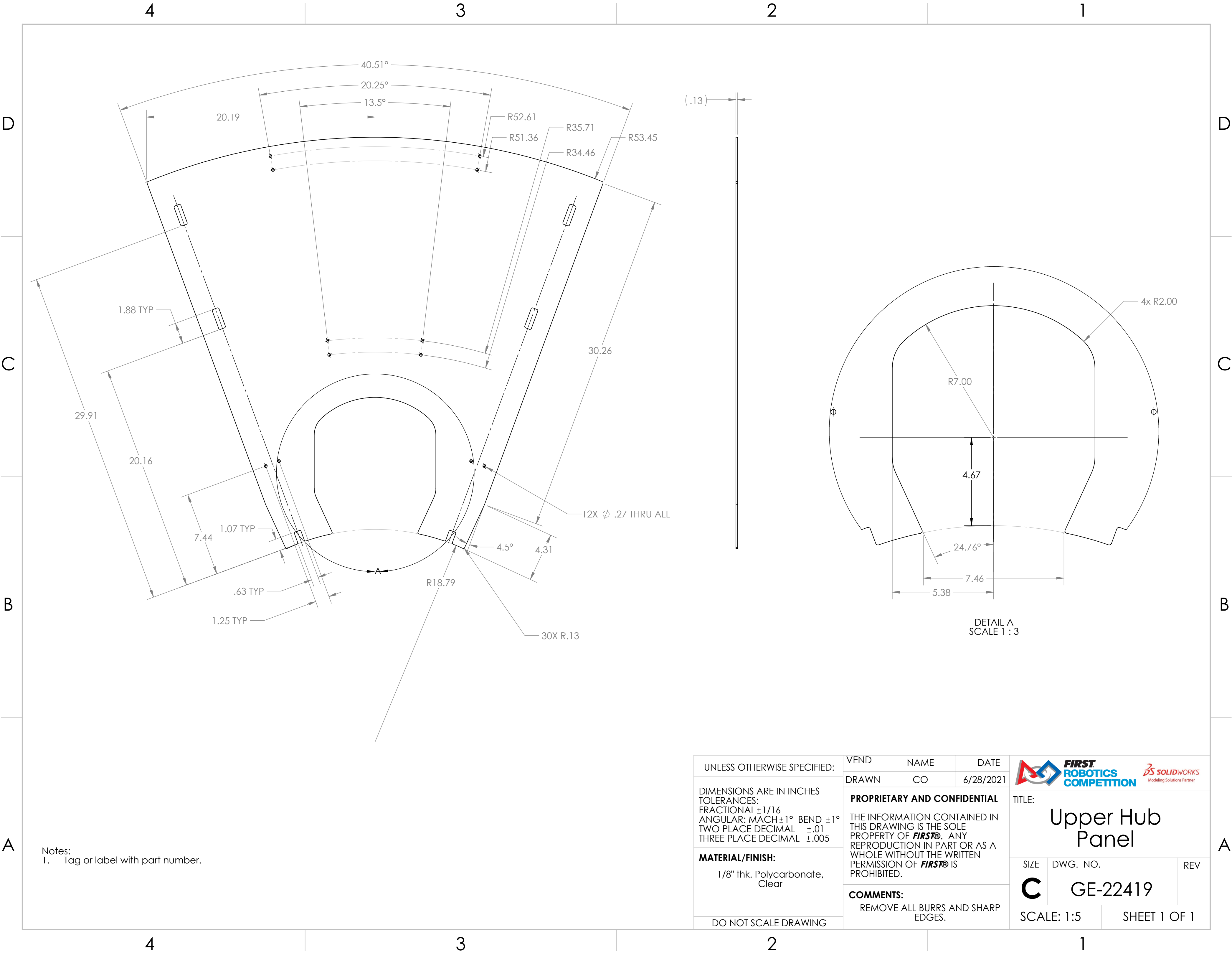
DWG. NO.

GE-22418

REV

SCALE: 1:2

SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

1/8" thk. Polycarbonate,
Clear

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

6/28/2021

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PERMISSION OF **FIRST®** IS
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.



**FIRST
ROBOTICS
COMPETITION**

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Upper Hub
Panel

SIZE

DWG. NO.

REV

C

GE-22419

SCALE: 1:5

SHEET 1 OF 1

D

D

C

C

B

B

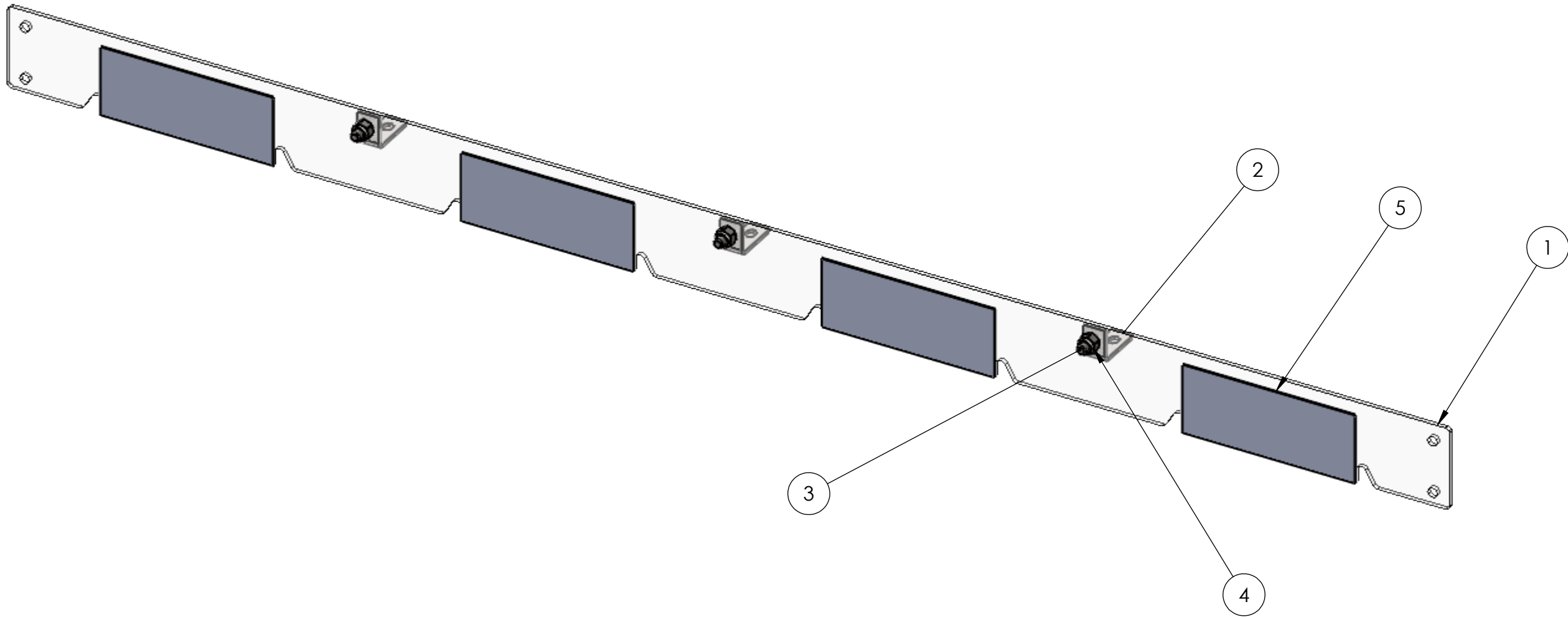
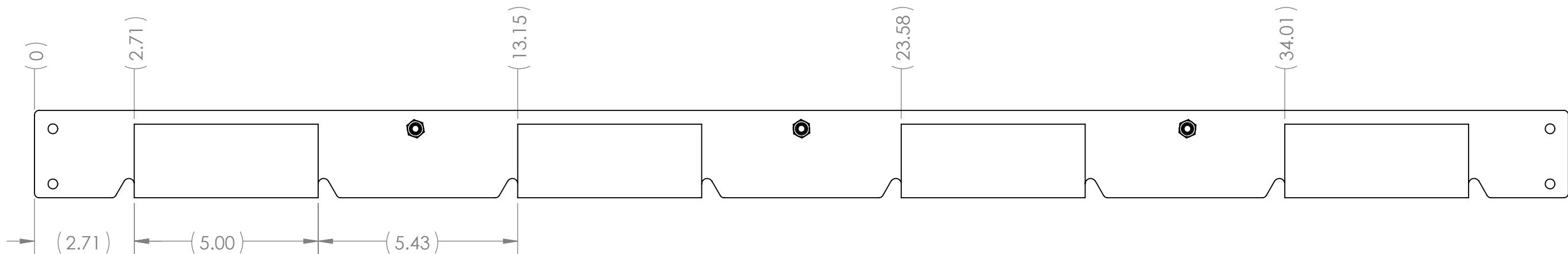
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4321

4321

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22421	Upper Hub Vision Plastic	1
2	GE-22422	Upper Hub Vision Angle	3
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	3
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	3
5	tape_VISIONTARGET	2" Wide, 5" Long 3M 8830 Scotchlite Reflective Material	4



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

11/3/2021

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

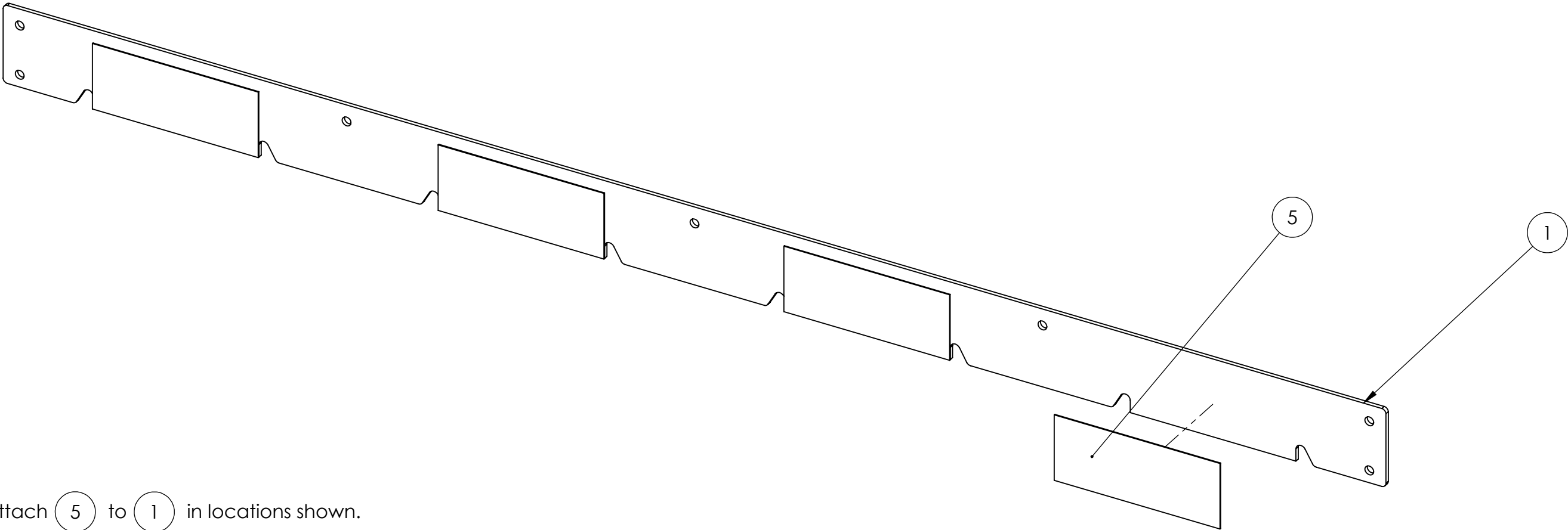


TITLE:
Upper Hub Vision Assembly

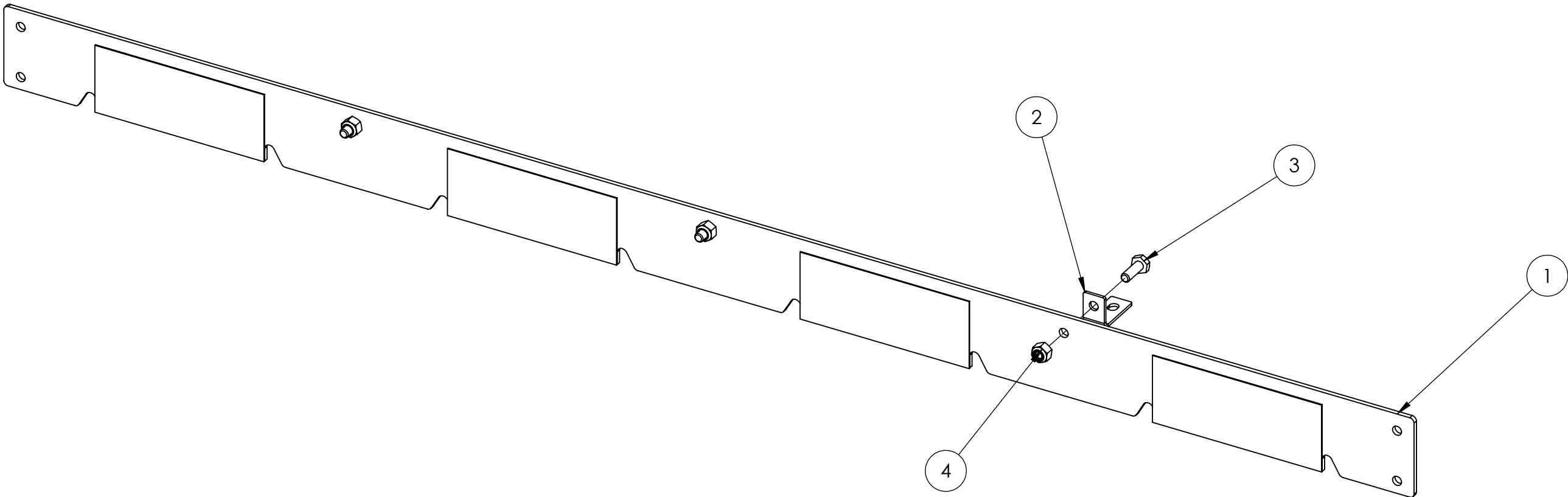
SIZE DWG. NO. REV

C GE-22420

SCALE: 1:3 SHEET 1 OF 2



Notes:
1. Attach 5 to 1 in locations shown.



Notes:
1. Attach 2 to 1 using 3 and 4.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	11/3/2021

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Upper Hub Vision Assembly

SIZE	DWG. NO.	REV
C	GE-22420	

SCALE: 1:3 SHEET 2 OF 2

D

C

B

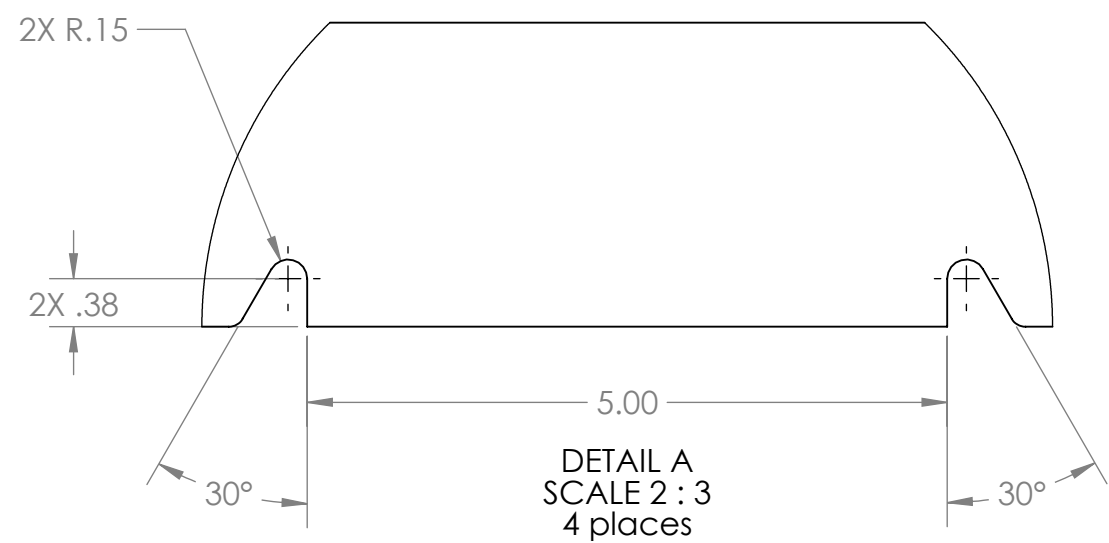
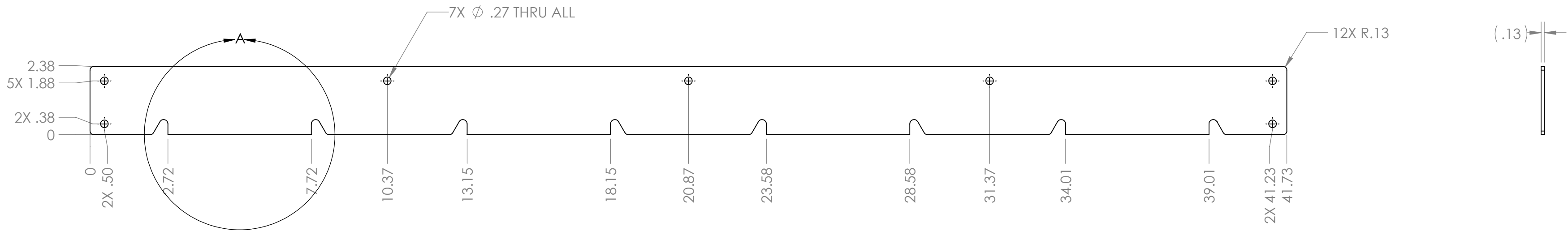
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D



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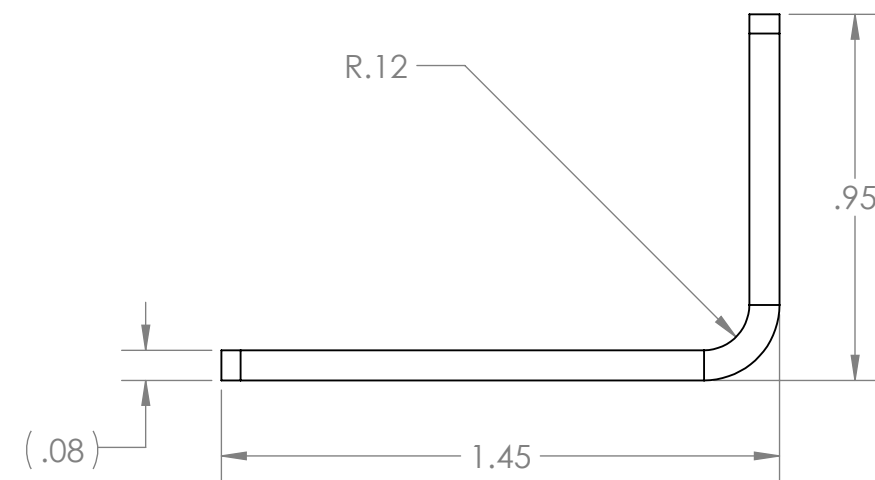
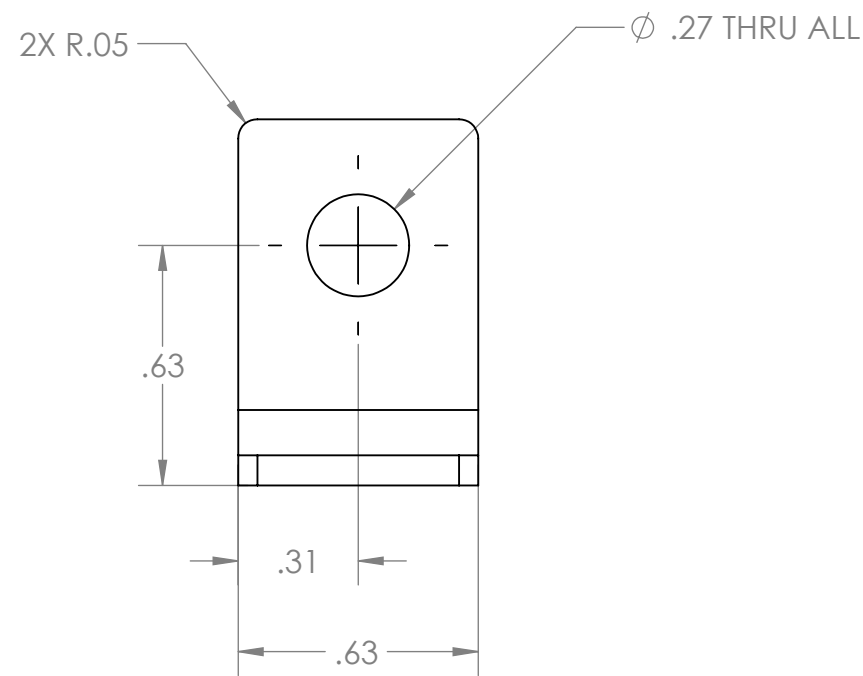
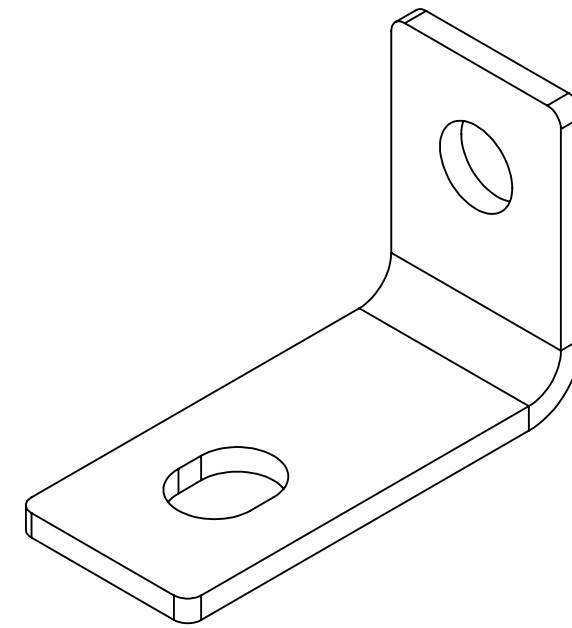
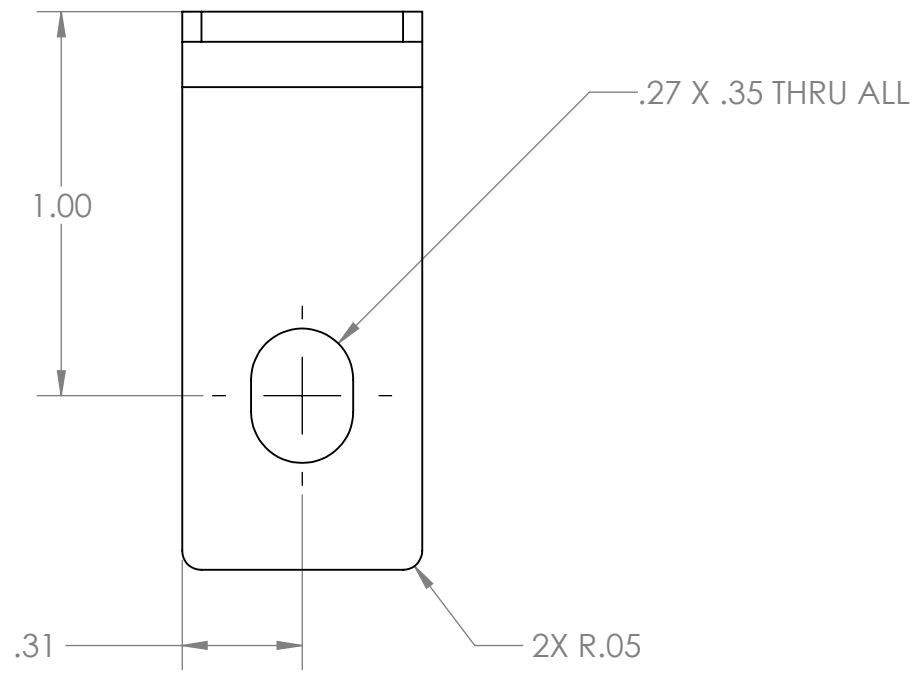
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: 1/8" thk. Polycarbonate, Clear DO NOT SCALE DRAWING	VEND	NAME	DATE	  TITLE: Upper Hub Vision Plastic	
	DRAWN	CO	7/27/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22421
SCALE: 1:3		SHEET 1 OF 1			



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$ MATERIAL/FINISH: 14 Ga. preplated steel DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <h1>Upper Hub Vision Angle</h1></div>		
	DRAWN	CO	7/29/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22422	
SCALE: 2:1		SHEET 1 OF 1				

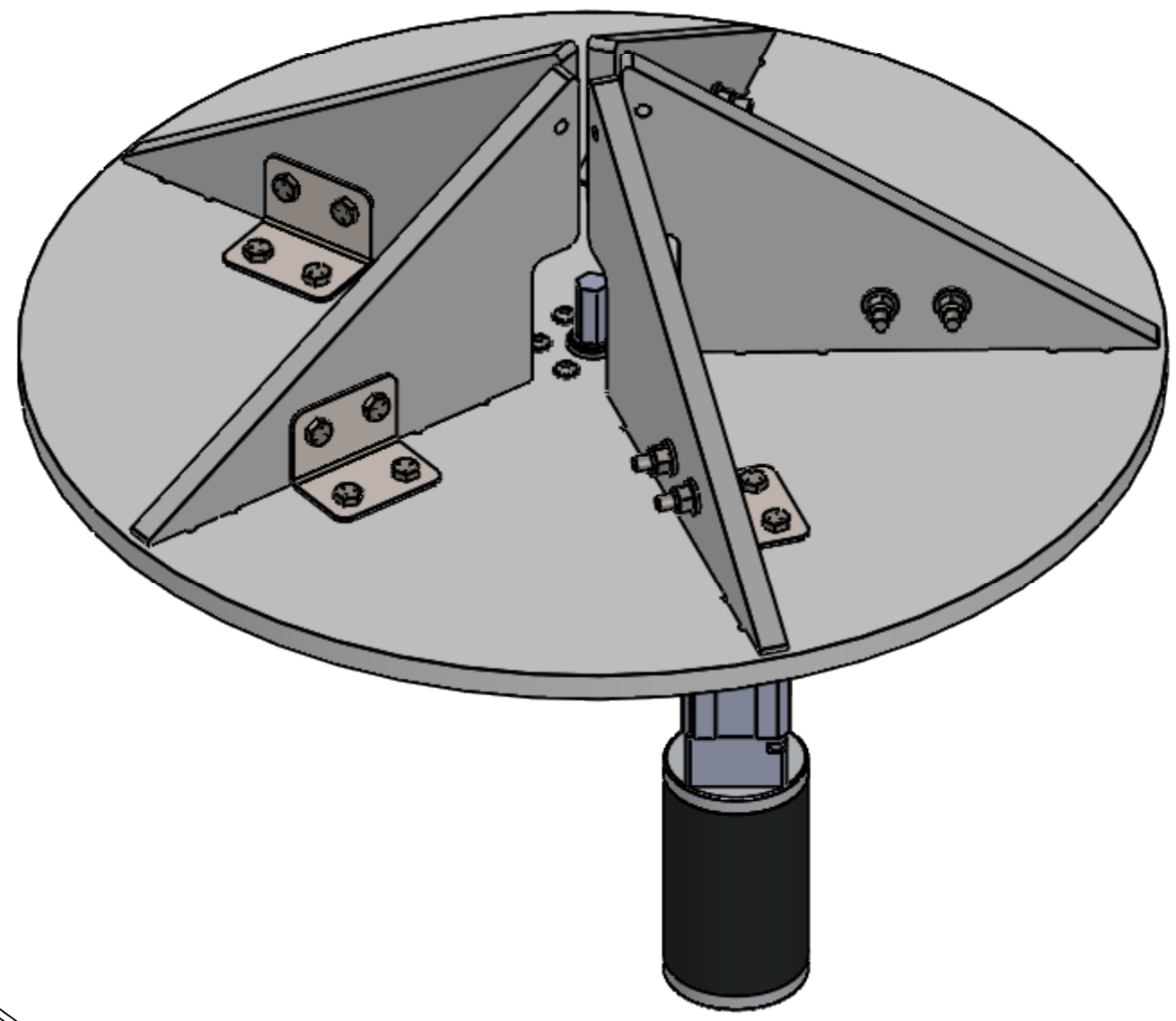
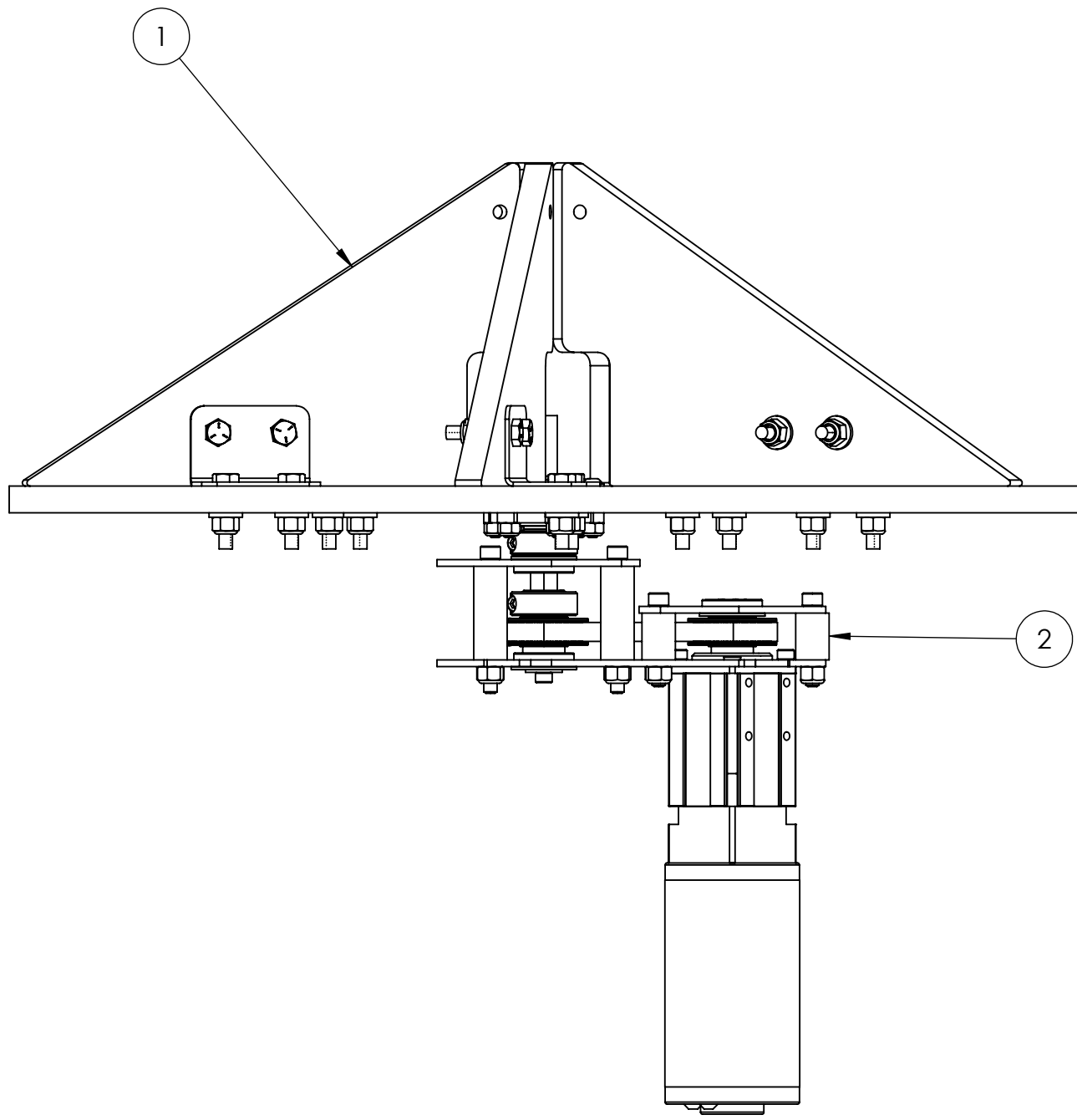
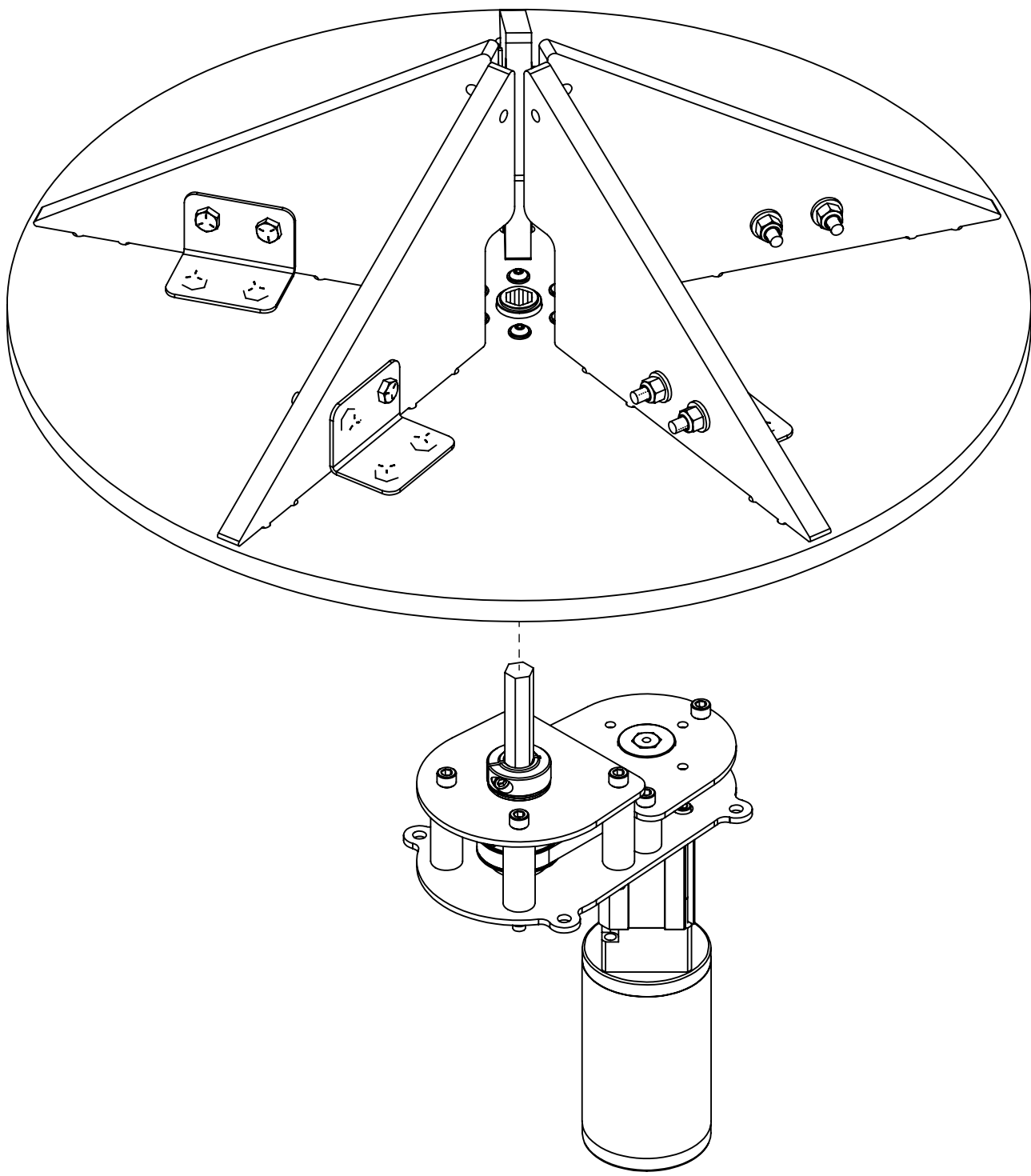
4 3 2 1

D D

C C


B B

A A



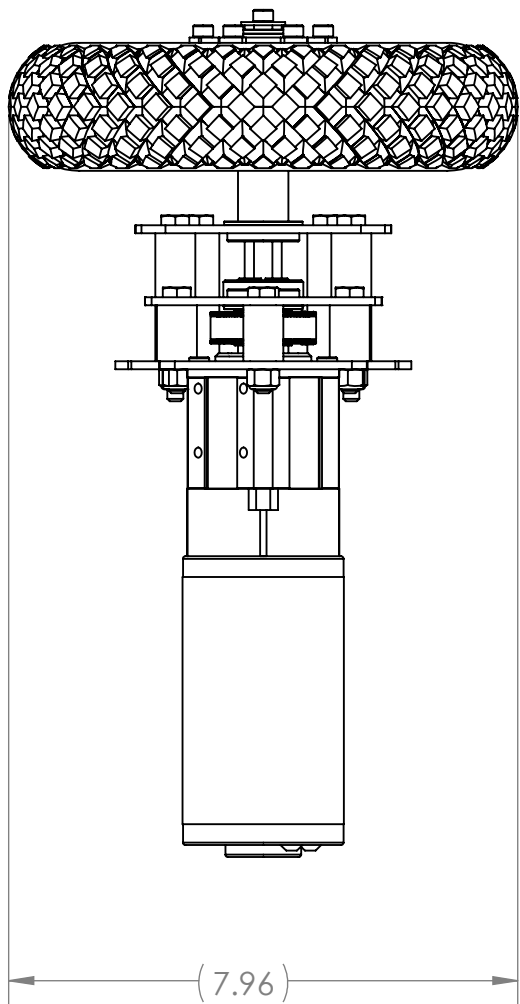
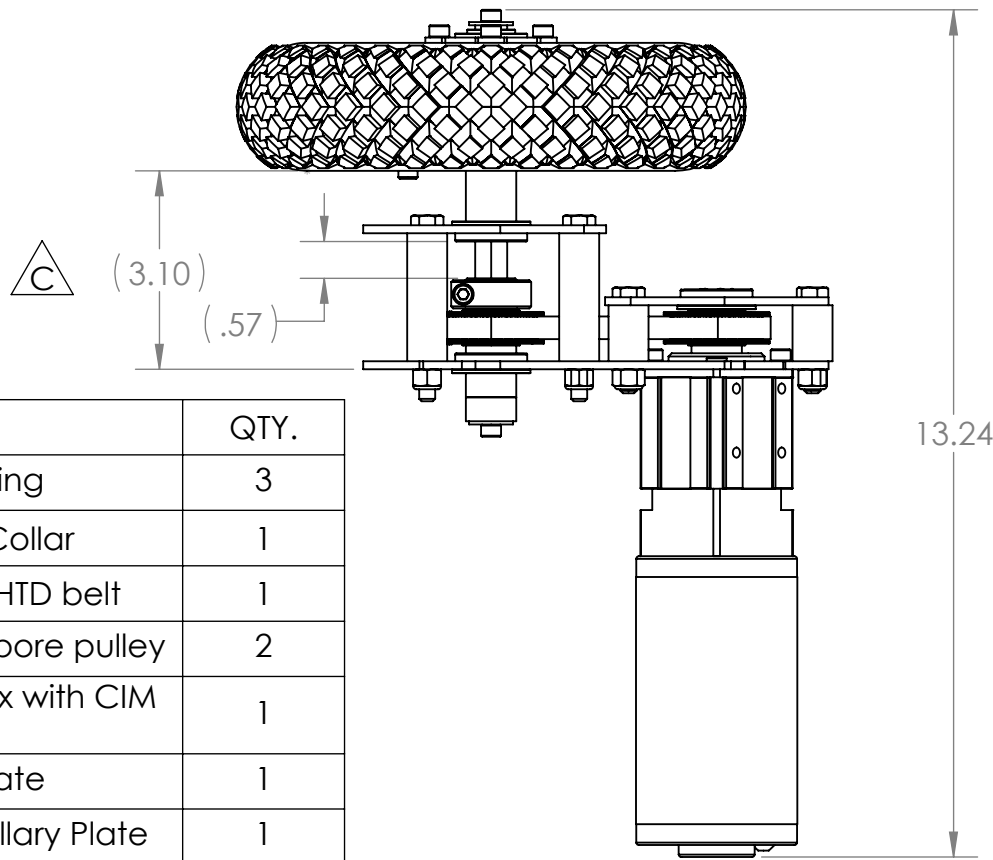
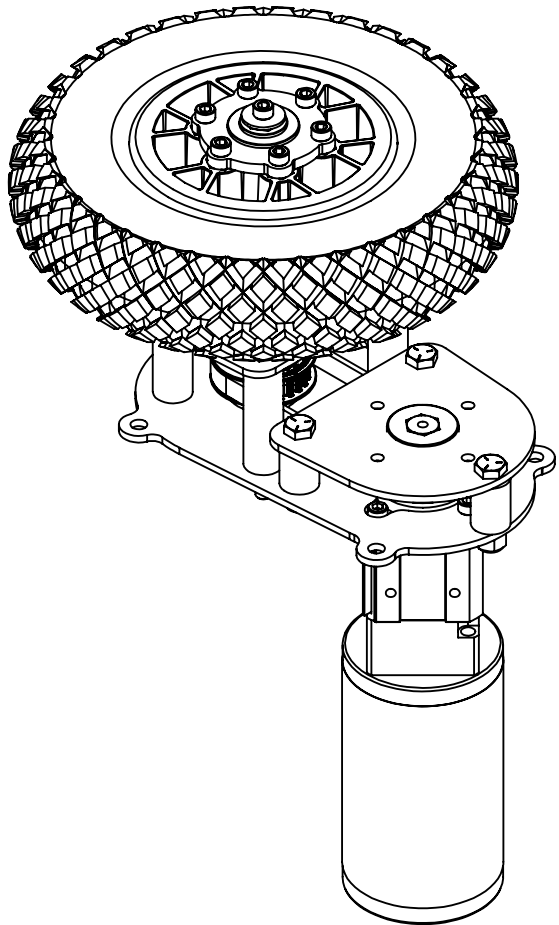
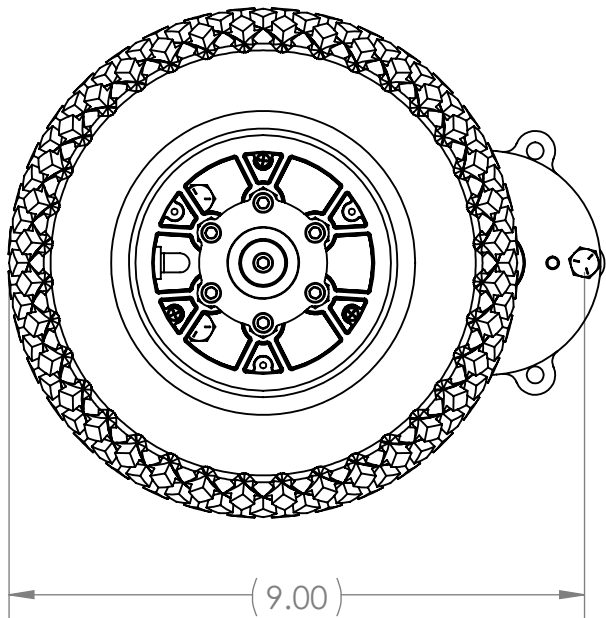
Notes:
1. Mount (1) on the exposed hex shaft of (2).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22433	Low Agitator Wheel Assembly	1
2	GE-22450	Low Agitator Drive Assembly	1



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 TITLE: Low Agitator Assembly			
	DRAWN	CO	12/16/2021			SIZE	DWG. NO.
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			C			GE-22431
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:3			SHEET 1 OF 1

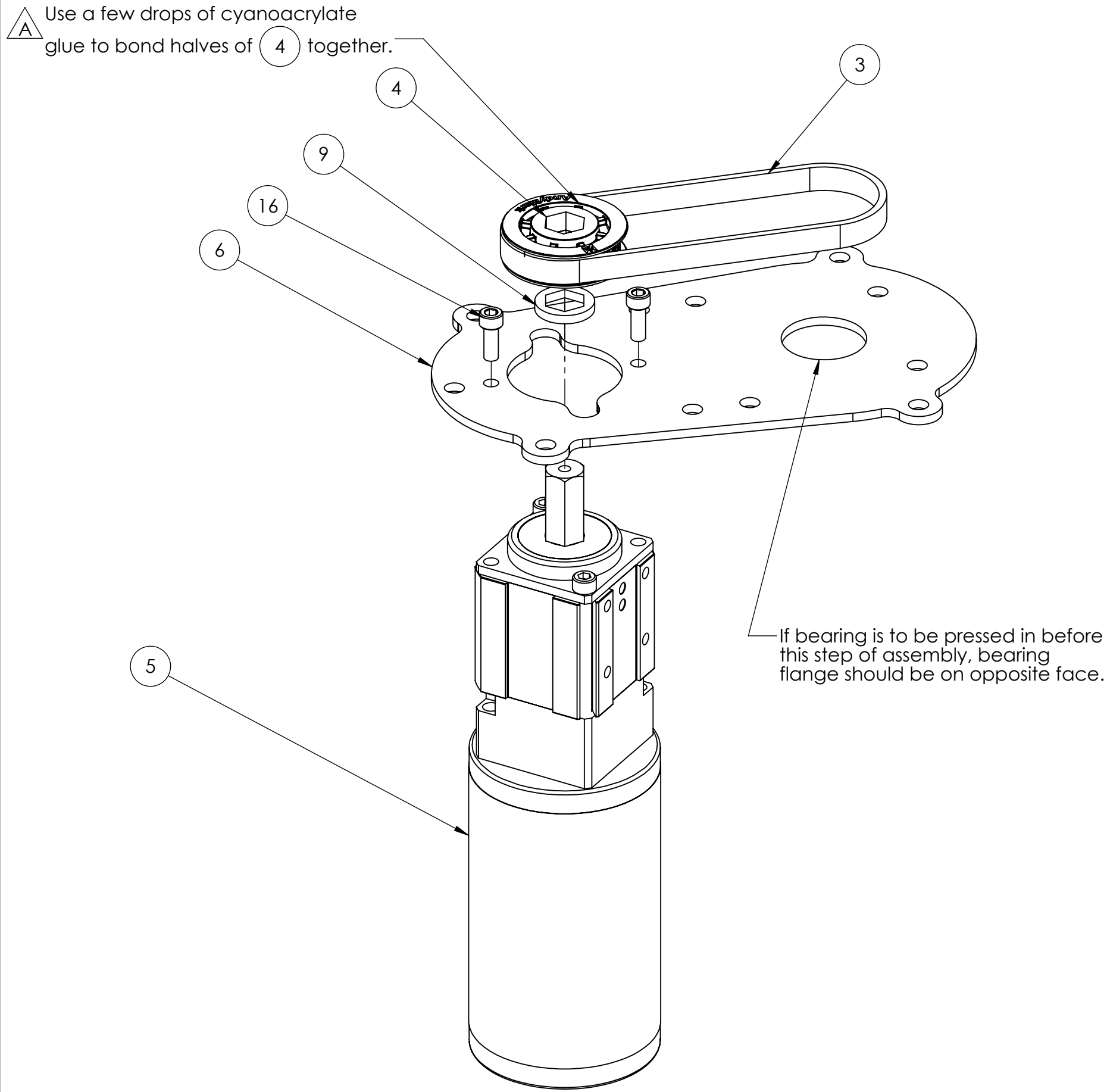
4 3 2 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-D4, 3-D4	A	Added notes for use of glue on pulleys. Updates made to geometry of GE-22442, GE-22443, GE-22444	8/17/2021	CPO
A3	B	Two fasteners changed from hex head to socket head bolts.	10/27/2021	CPO
A3, B3, 3-A4	C	Changed fasteners back to hex head. Changed length of bolts and spacers to reduce wheel height. Spacers added to capture extra hex shaft. Assembly instructions modified to include new spacers.	11/23/2021	CPO



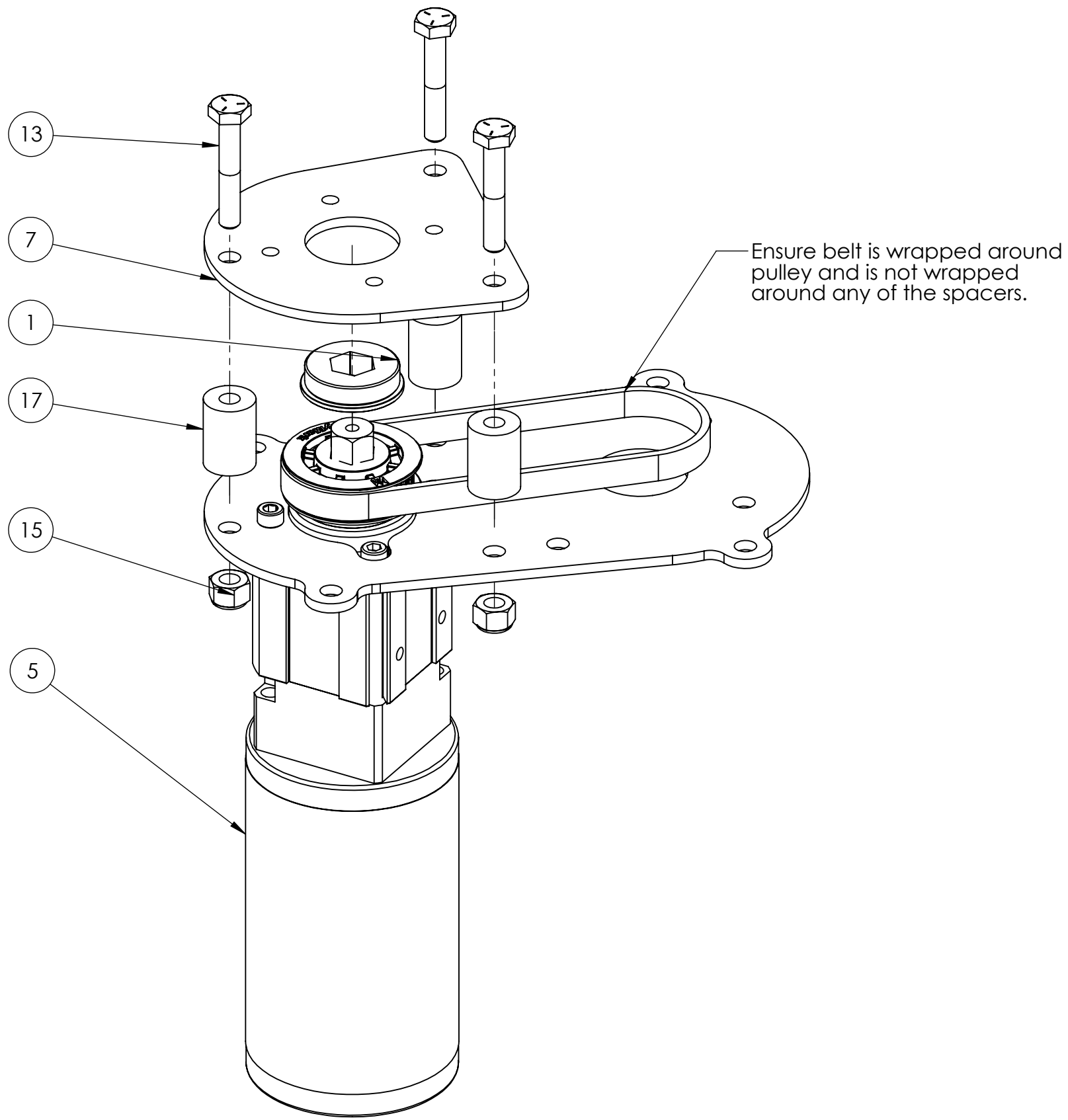
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22437	1/2 in. Hex Bearing	3
2	GE-22438	1/2 in. Hex Shaft Collar	1
3	GE-22439	60t 9mm wide 5mm HTD belt	1
4	GE-22440	24 tooth 5mm HTD hex bore pulley	2
5	GE-22441-012	12:1 CIM Sport Gearbox with CIM Motor	1
6	GE-22442	Agitator Baseplate	1
7	GE-22443	Agitator Gearbox Auxillary Plate	1
8	GE-22444	Agitator Output Shaft Auxillary Plate	1
9	GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	2
10	GE-22445-1000	1/2 in. hex molded spacer, 1 in. long	2
11	GE-22447	High Agitator Wheel with Hub	1
12	GE-22448	High Agitator Drive Hex Shaft	1
13	hex_.25_20_1.5_partial	Steel Hex Head Screw, 1/4"-20 x 1-1/2" long, partially threaded	3
14	hex_.25_20_2.75_partial	Steel Hex Head Screw, 1/4"-20 x 2-3/4" long, partially threaded	4
15	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	7
16	socket_hex_10_32_.5_nylon	Socket Head Screw, 10-32 x 0.5" long, with nylon patch	4
17	spacer_.252_.625_.875	Spacer, .252 ID, .625 OD, .875 long	3
18	spacer_.255_.625_2	Spacer, .252 ID, .625 OD, 2 long	4
19	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	2
20	GE-22445-375	1/2 in. hex molded spacer, 3/8 in. long	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>	
	DRAWN	CO	6/25/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL			TITLE: High Agitator Assembly	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
	MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C
DO NOT SCALE DRAWING				REV C	
				SCALE: 1:3 SHEET 1 OF 4	





Notes:

1. Attach 5 to 6 using 16 .
2. Slide 9 and 4 in order onto the shaft of 5 .
3. Place 3 on 4 .



Notes:

1. Insert or press 1 into 7 .
2. Slide 1 7 onto the shaft of 5 , noting flange orientation.
3. Attach 1 7 to the assembly using 17 to space the plates and 13 and 15 to fasten. Be careful of belt routing.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	 		
	DRAWN	CO	6/25/2021			
	DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE:	
High Agitator Assembly						
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22432	C
DO NOT SCALE DRAWING				SCALE: 2:3		SHEET 2 OF 4

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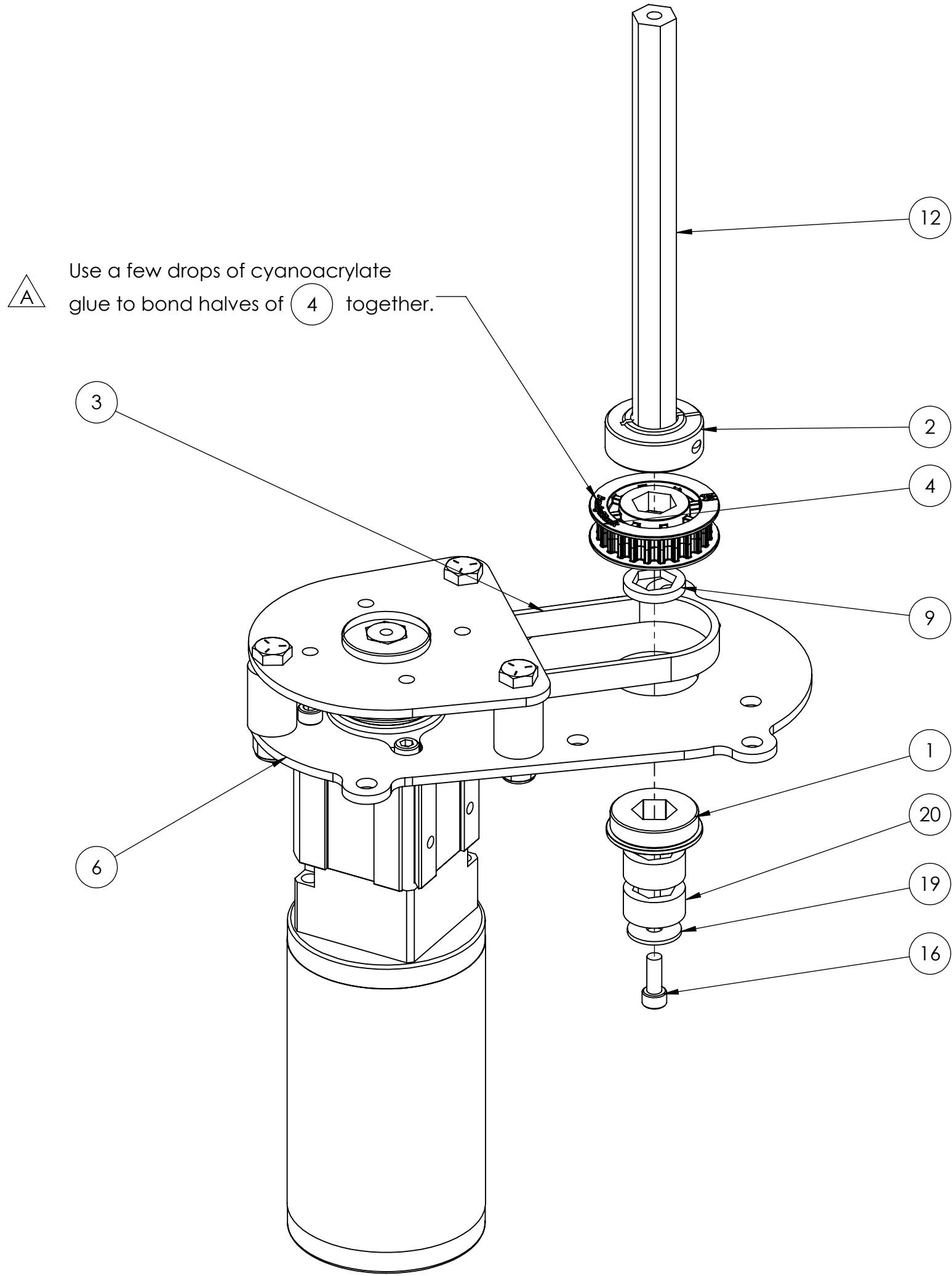
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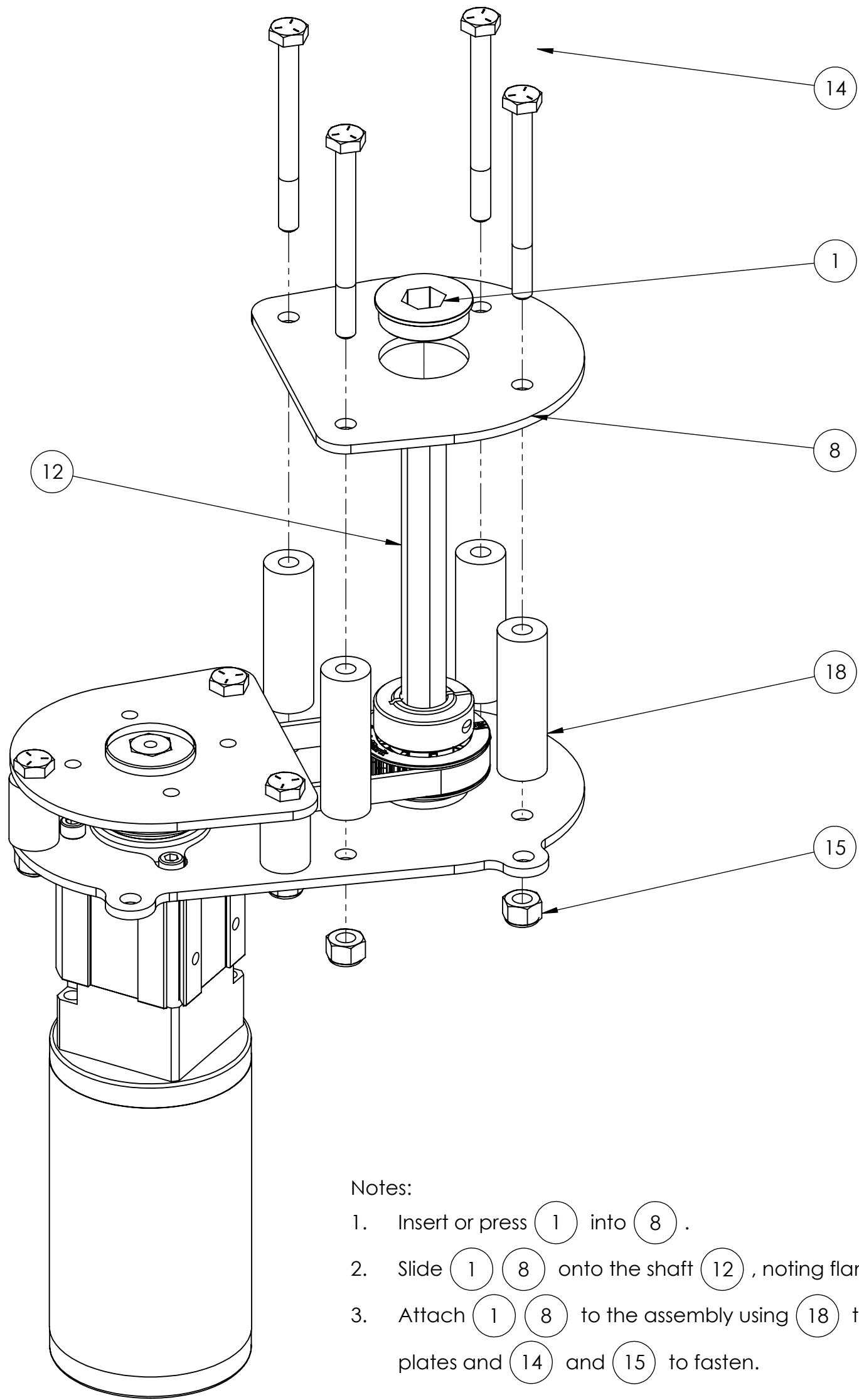
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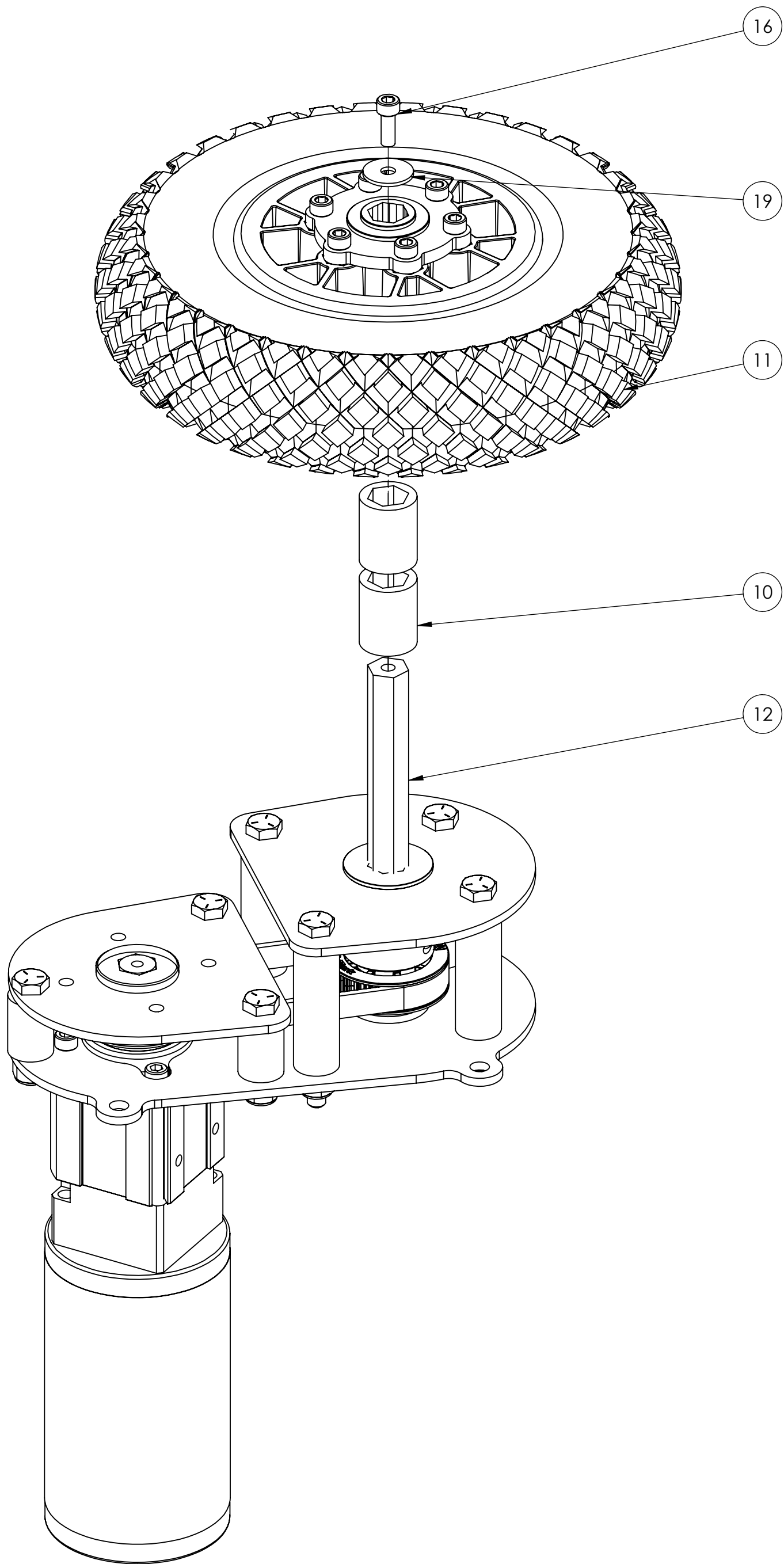


- Notes:
- If not already done, press or insert 1 into 6 , noting flange orientation.
 - Slide items 2 , 4 , and 9 onto 12 , being careful of order.
 - Slide shaft into place, aligning 3 onto 4 , then aligning 12 with 1 .
 - Slide 20 (qty 2) onto 12 .
 - Attach 16 and 19 to 12 . 19 must be large enough diameter to prevent shaft being pulled past spacer.
 - With 20 flush to each other and 1 , 12 flush to the bottom of 20 , and 2 4 9 all flush to each other and 1 , tighten set screw on 2 .





- Notes:
- Insert or press 1 into 8 .
 - Slide 1 8 onto the shaft 12 , noting flange orientaiton.
 - Attach 1 8 to the assembly using 18 to space the plates and 14 and 15 to fasten.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	  		
	DRAWN	CO	6/25/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL			TITLE: High Agitator Assembly		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. GE-22432	REV C
DO NOT SCALE DRAWING				SCALE: 2:3		SHEET 3 OF 4



Notes:

1. Slide (10) x 2 onto (12) .
2. Slide (11) onto (12) , noting wheel orientation.
3. Fasten using (19) and (16) . (19) must be large enough diameter to prevent shaft being pulled past hub.

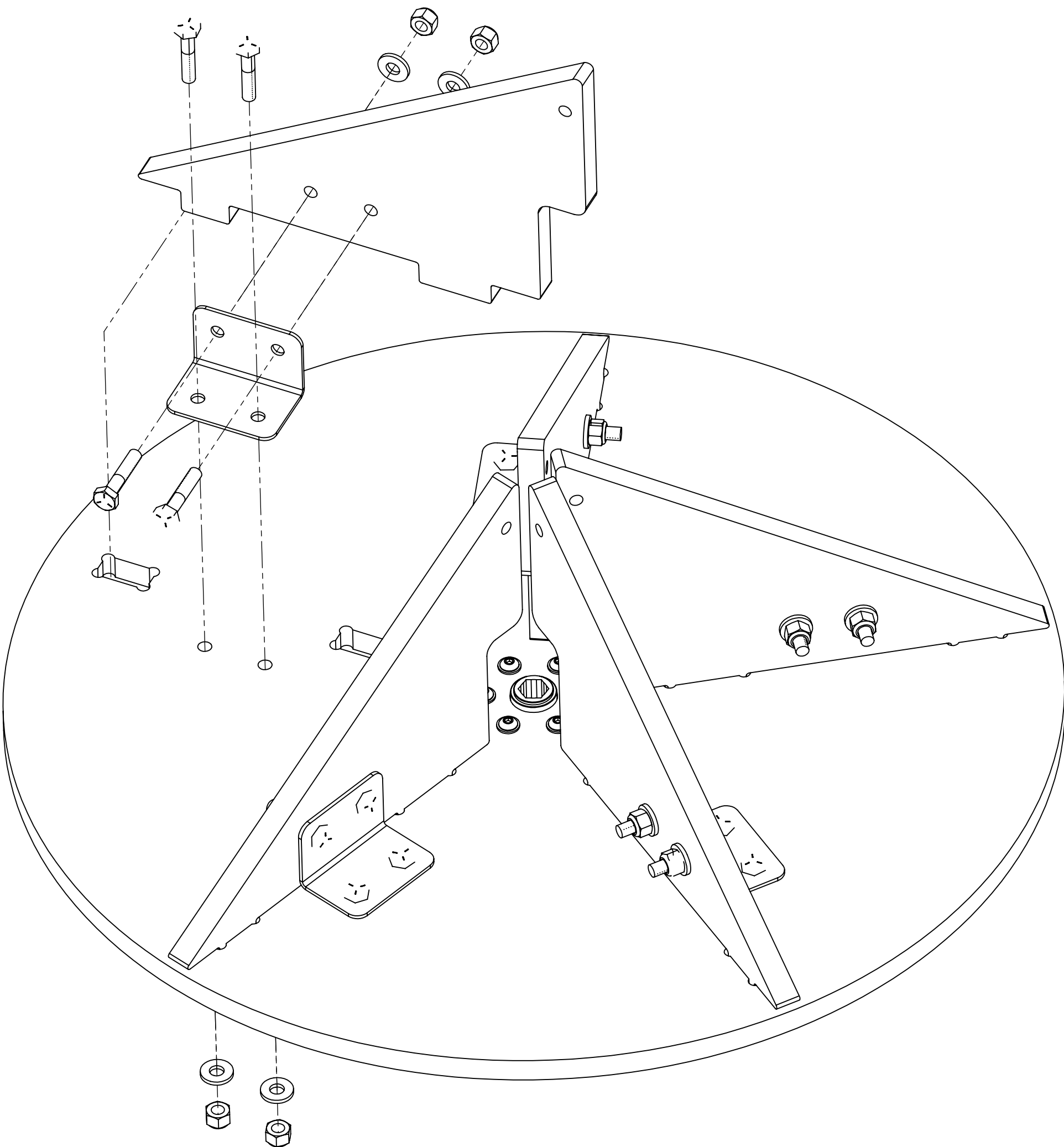
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	DRAWN	CO	6/25/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE: High Agitator Assembly	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
			C	GE-22432	C
			SCALE: 2:3		SHEET 4 OF 4

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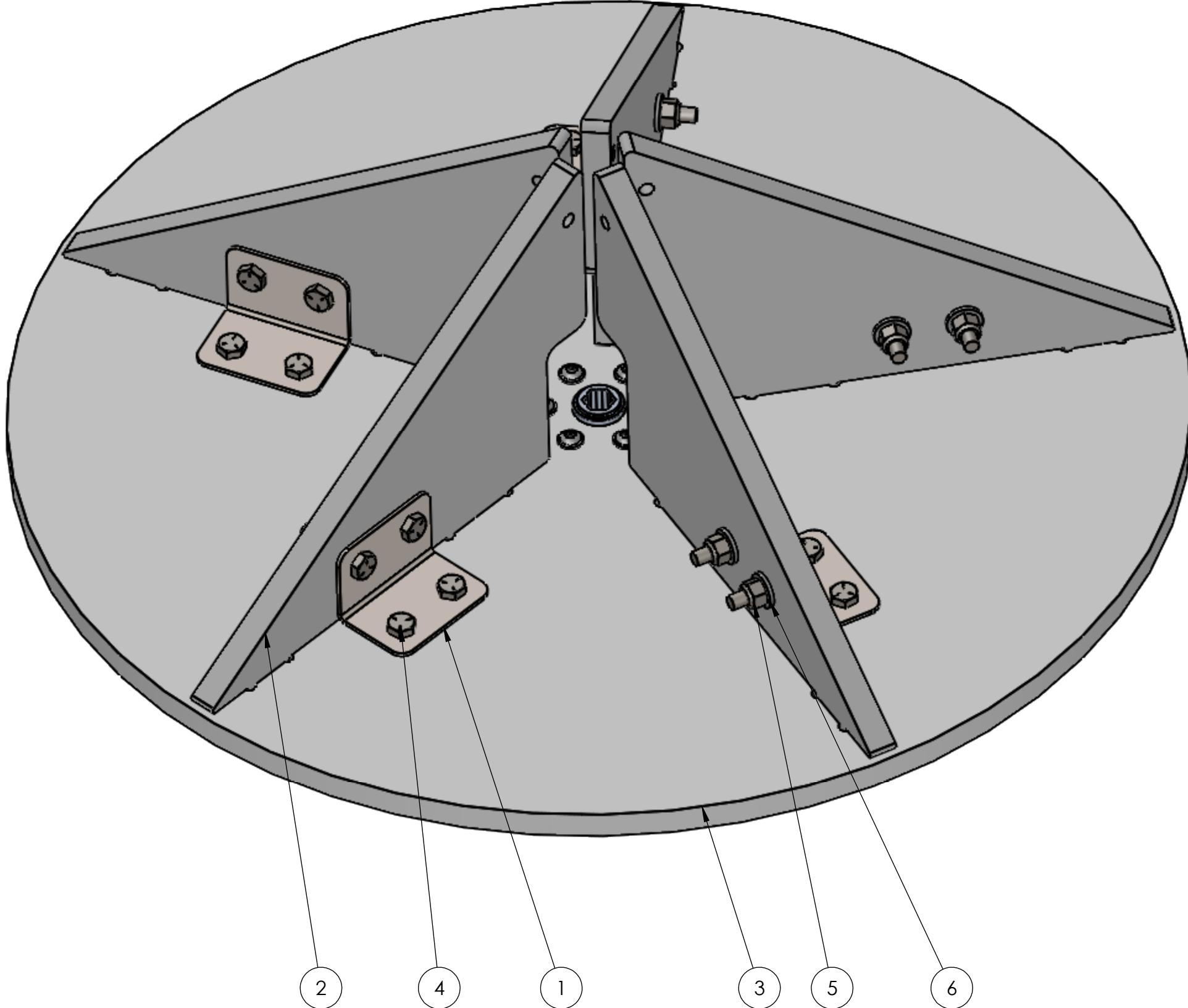
A



Notes:

- 1. Attach (2) to (1) using (4), (5), and (6).
- 2. Attach the previous step to (3) using (4), (5), and (6). Tabs on (2) should insert into slots in (3).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	5
2	GE-22435	Low Agitator Triangle	5
3	GE-22451	Low Agitator Wheel Base Assembly	1
4	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	20
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	20
6	washer_flat_.25	Flat Washer for 1/4" Screw	20





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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: Tag or label with part number DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	12/29/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				TITLE:
					Low Agitator Wheel Assembly
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE: C DWG. NO. GE-22433 REV
SCALE: 1:2				SHEET 1 OF 1	

4 3 2 1

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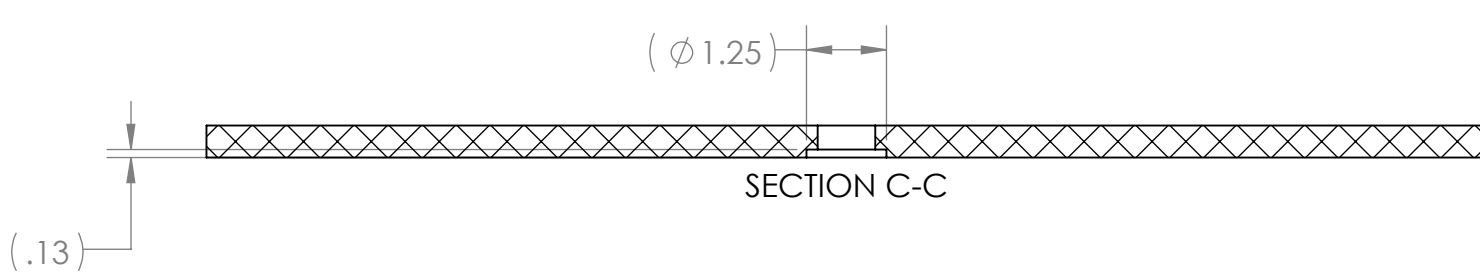
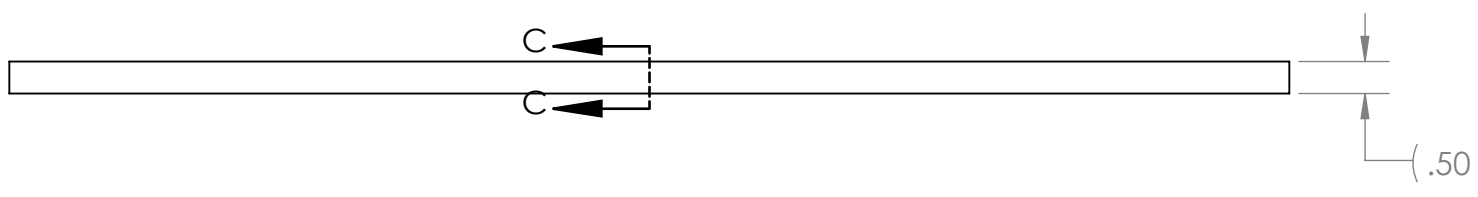
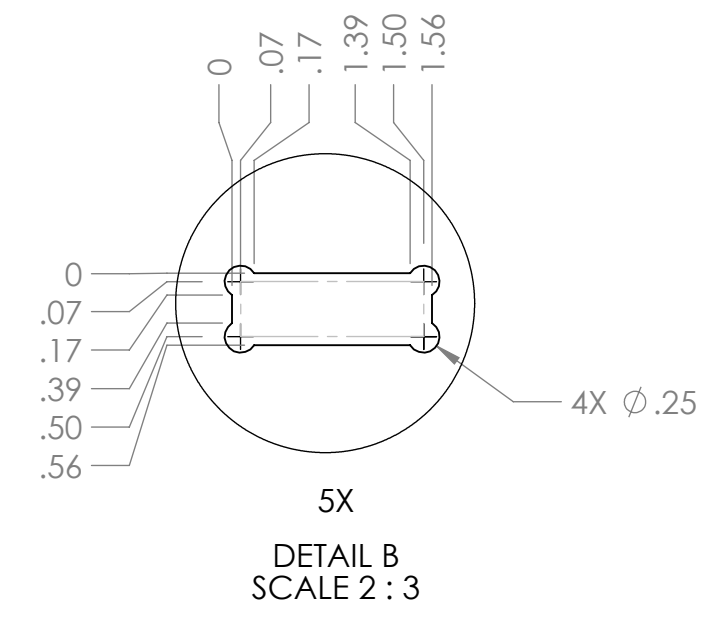
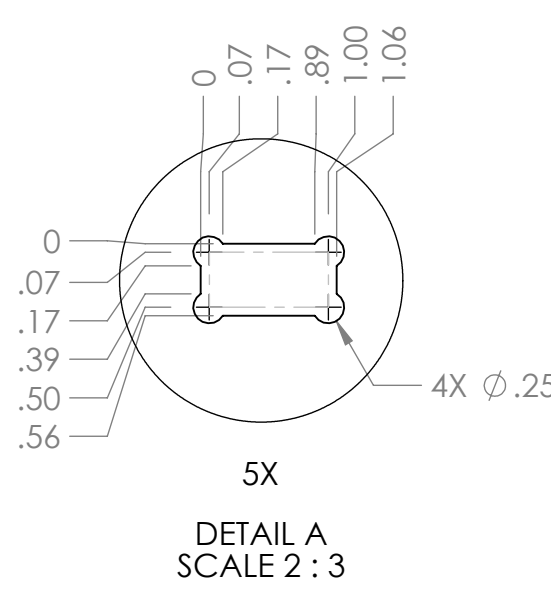
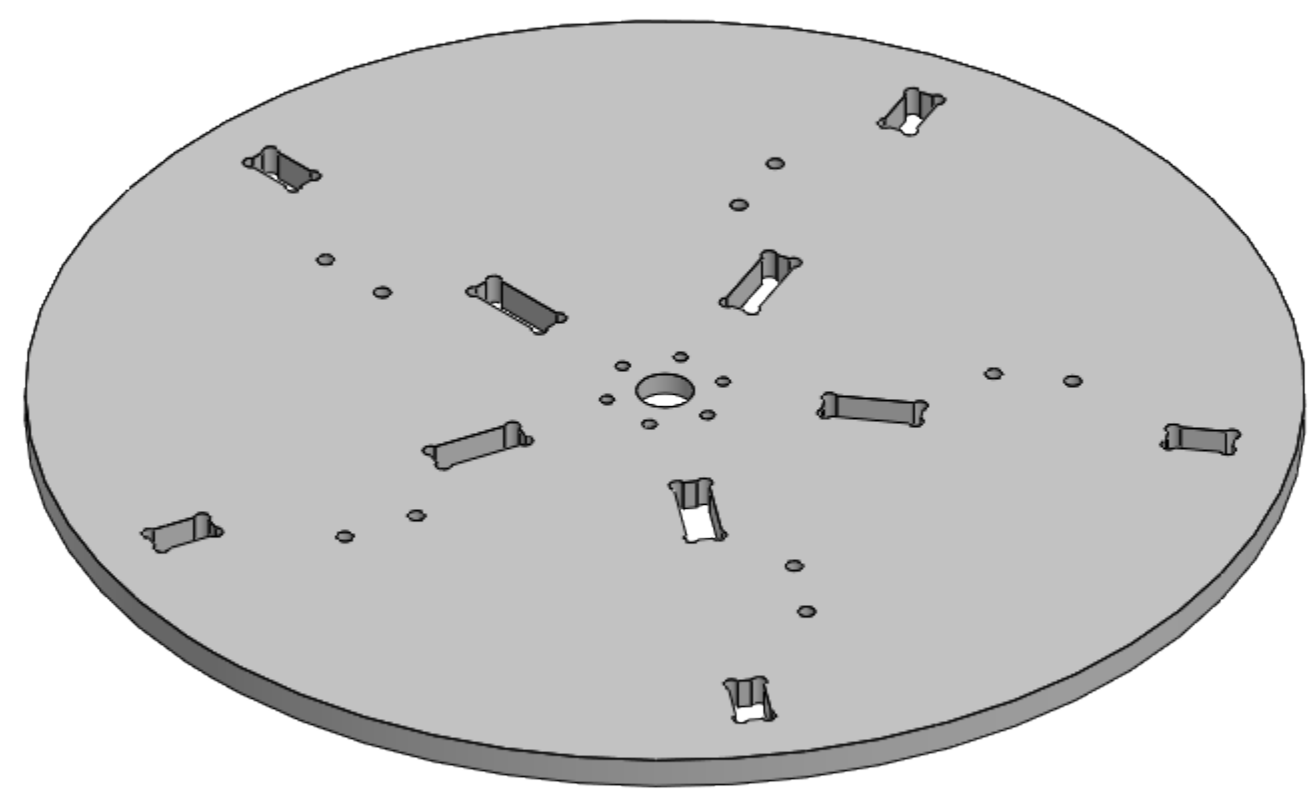
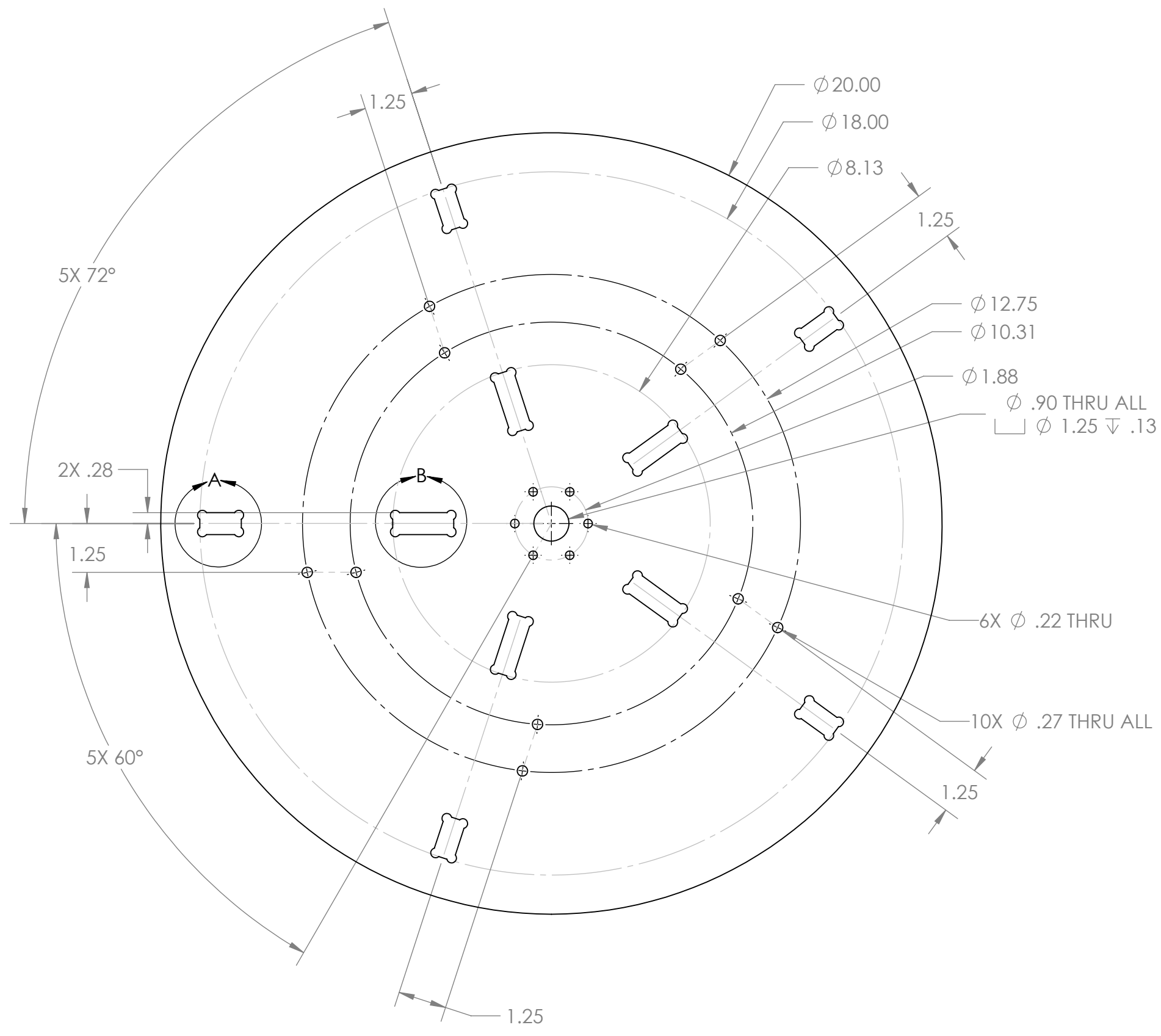
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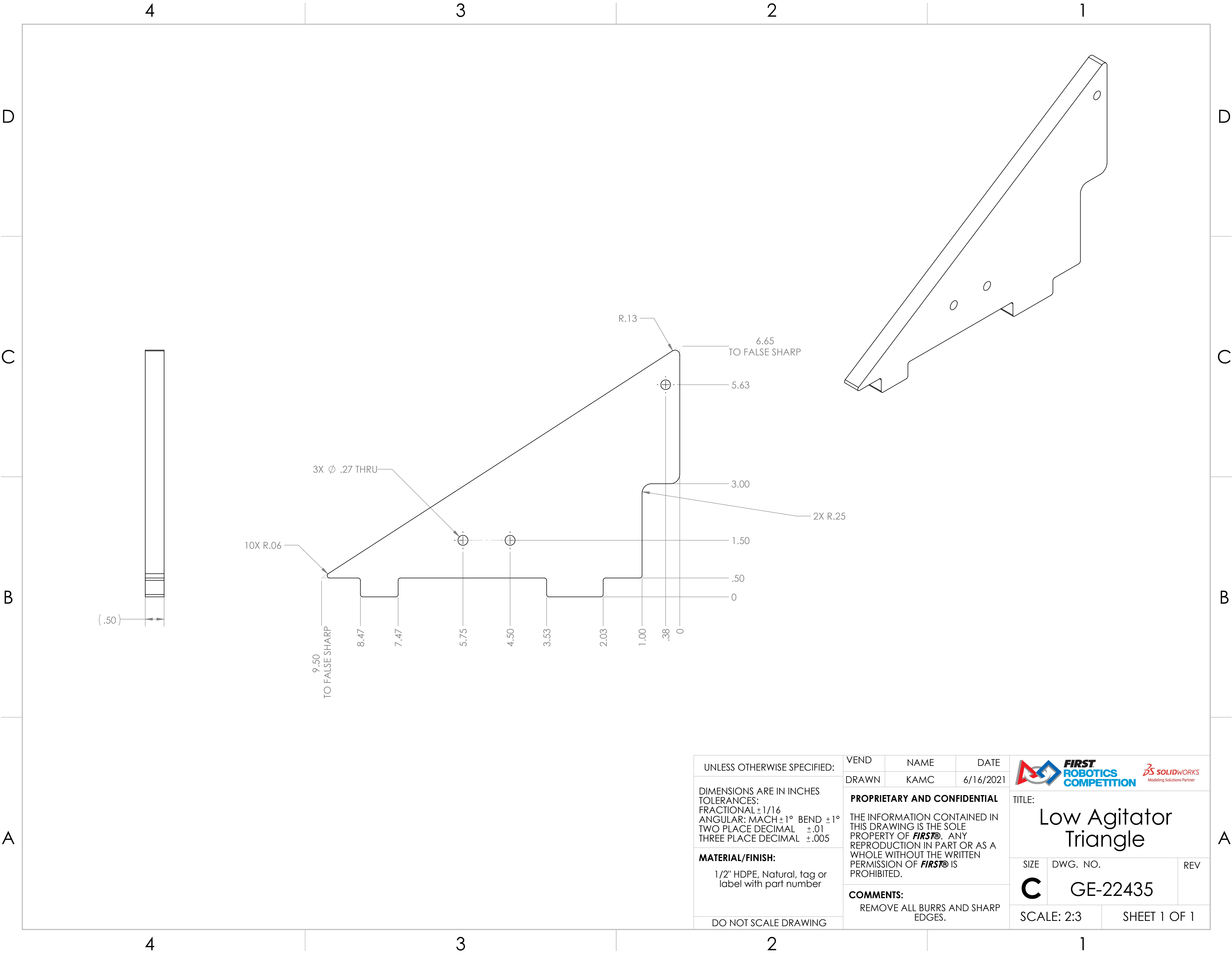
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: 1/2" HDPE, Natural. Tag or label with part number. DO NOT SCALE DRAWING	VEND	NAME	DATE	 TITLE: Low Agitator Wheel Base	
	DRAWN	KAMC	5/13/2021	SIZE	DWG. NO.
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			C	GE-22434
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:3 SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Low Agitator Triangle</h1></div>		
	DRAWN	KAMC	6/16/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE C		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 1/2" HDPE, Natural, tag or label with part number	COMMENTS:			DWG. NO.		REV
	REMOVE ALL BURRS AND SHARP EDGES.			GE-22435		
DO NOT SCALE DRAWING				SCALE: 2:3		SHEET 1 OF 1

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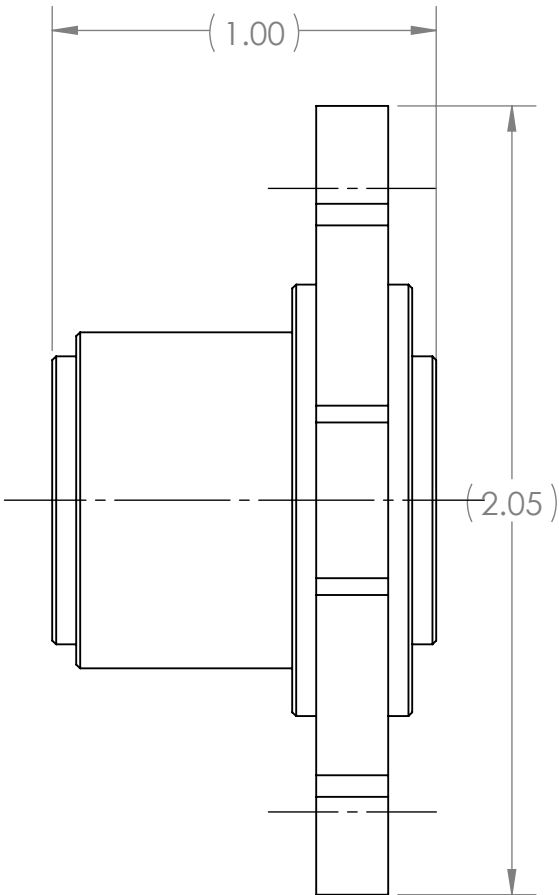
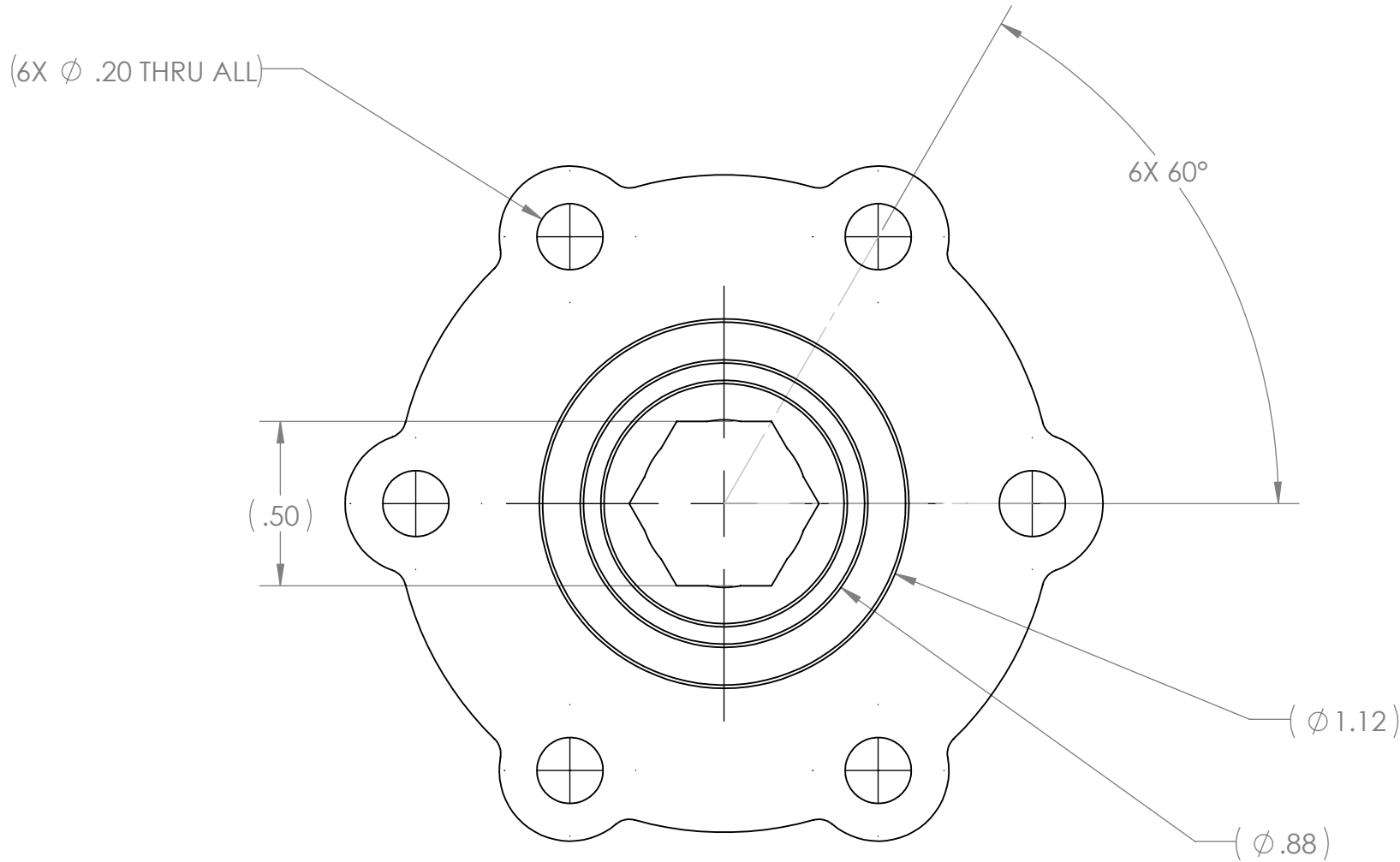
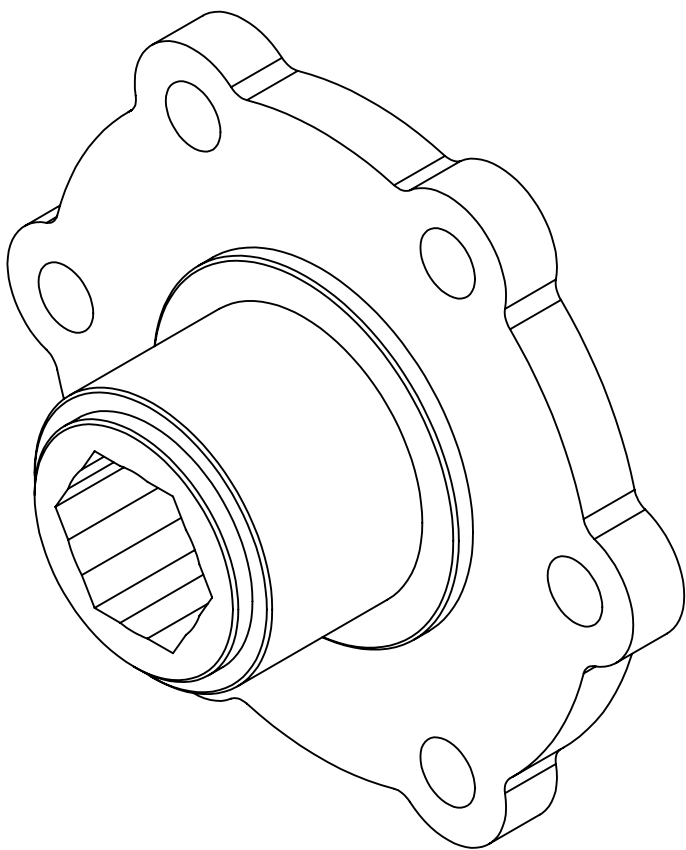
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B

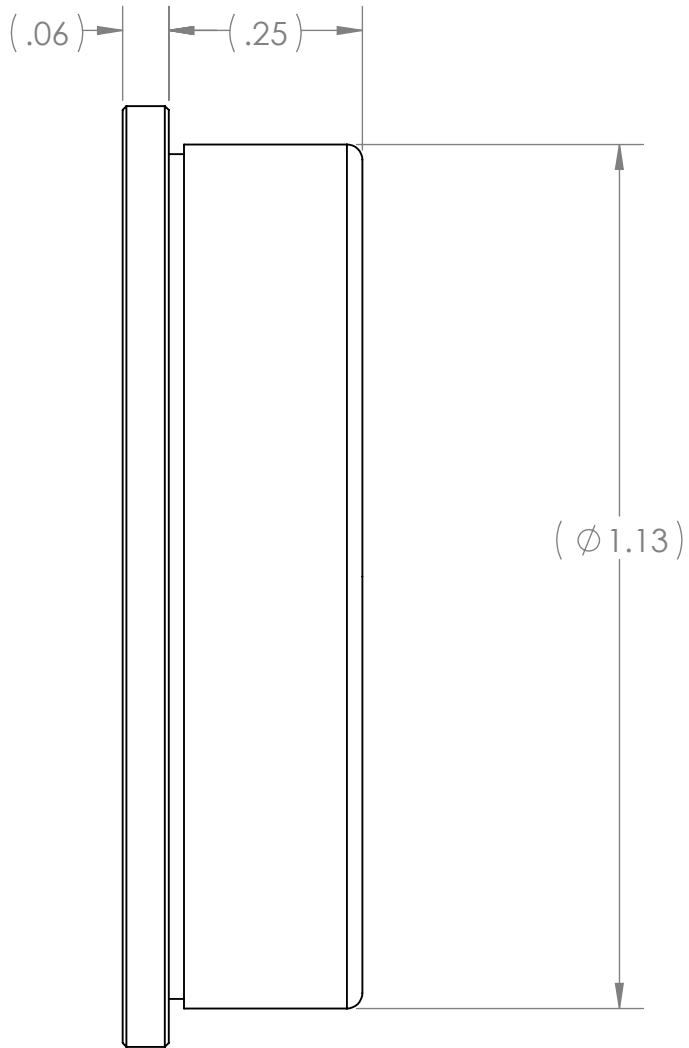
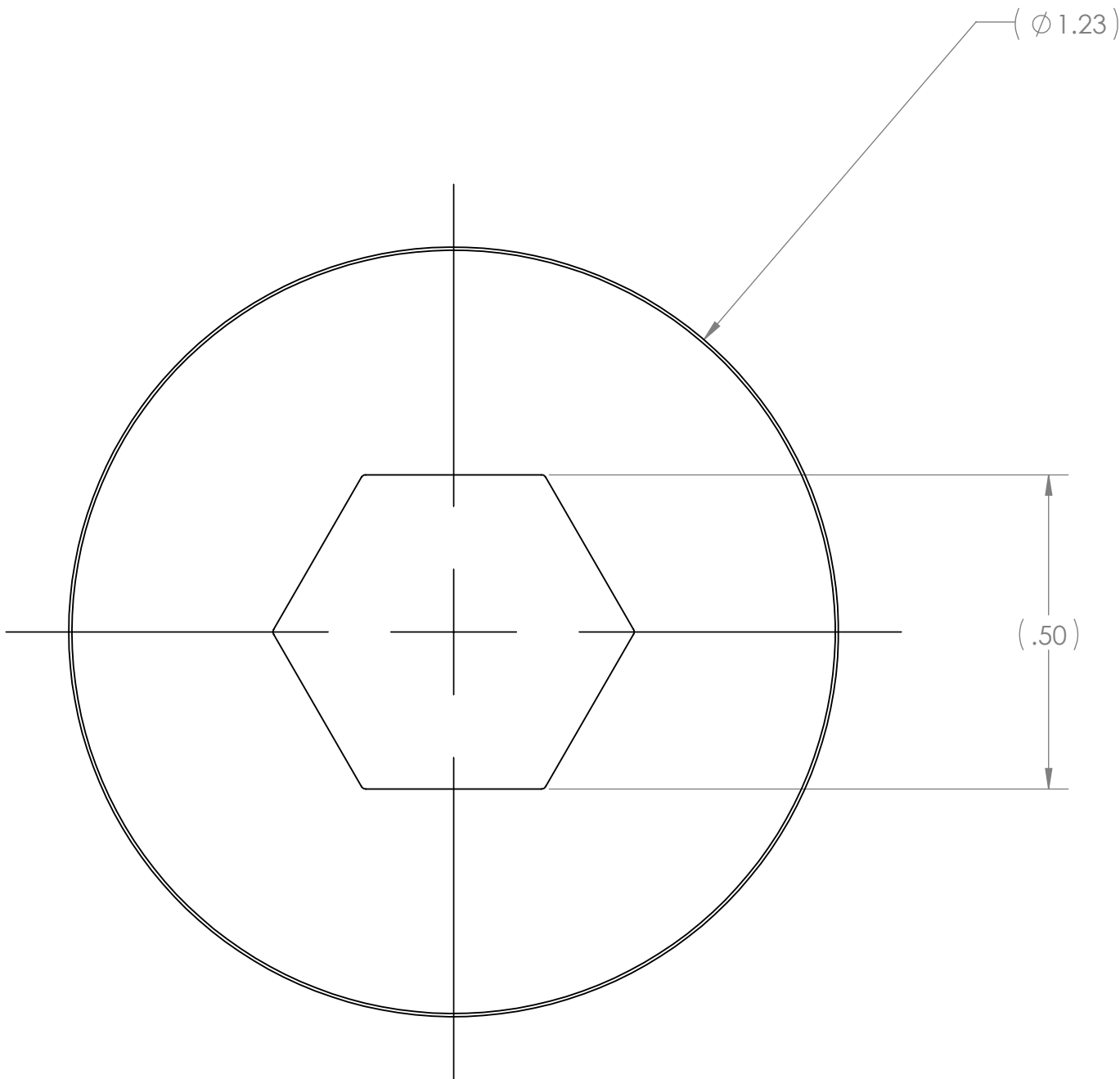
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Description: Hex Hub
Vendor: AndyMark
Part Number: am-4124

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: AndyMark 1/2 in. Hex Hub</div> <div>SIZE: C DWG. NO.: GE-22436 REV: <div>SCALE: 2:1 SHEET 1 OF 1</div></div>					
	DRAWN	KAMC	6/21/2021						
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.								
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.								



- Notes:
- 1. Description: 1/2 in. flanged hex bearing
 - 2. Source: AndyMark
 - 3. Item #: am-2986
 - 4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

6/22/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



FIRST
ROBOTICS
COMPETITION



TITLE:

1/2 in. Hex
Bearing

SIZE

DWG. NO.

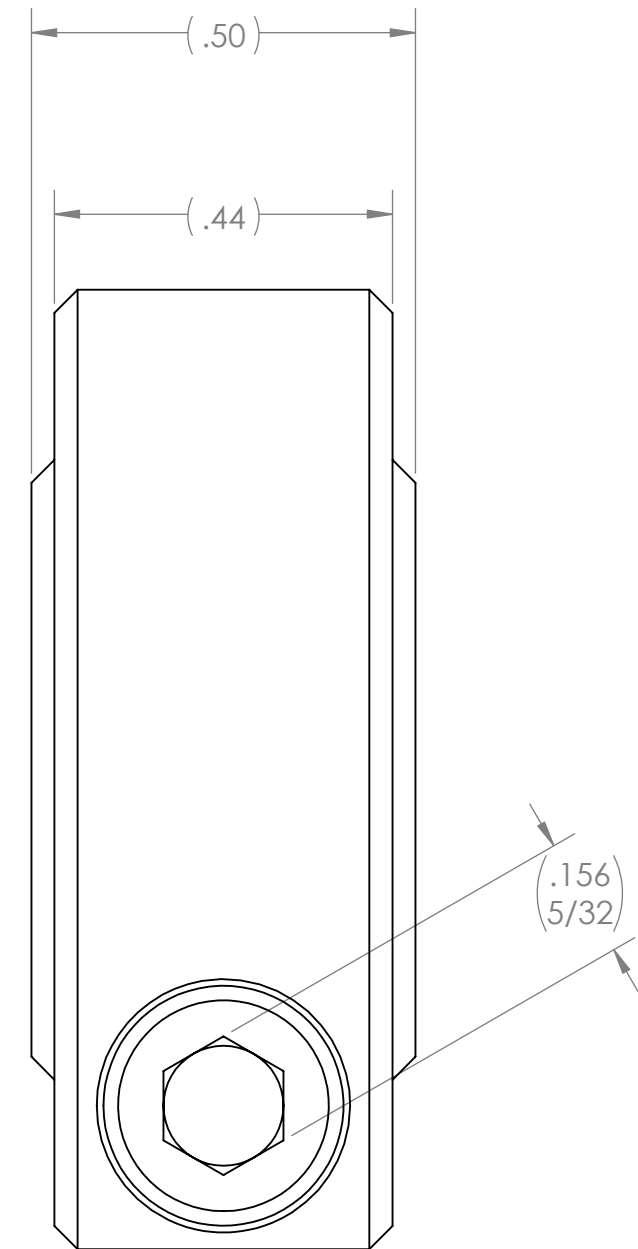
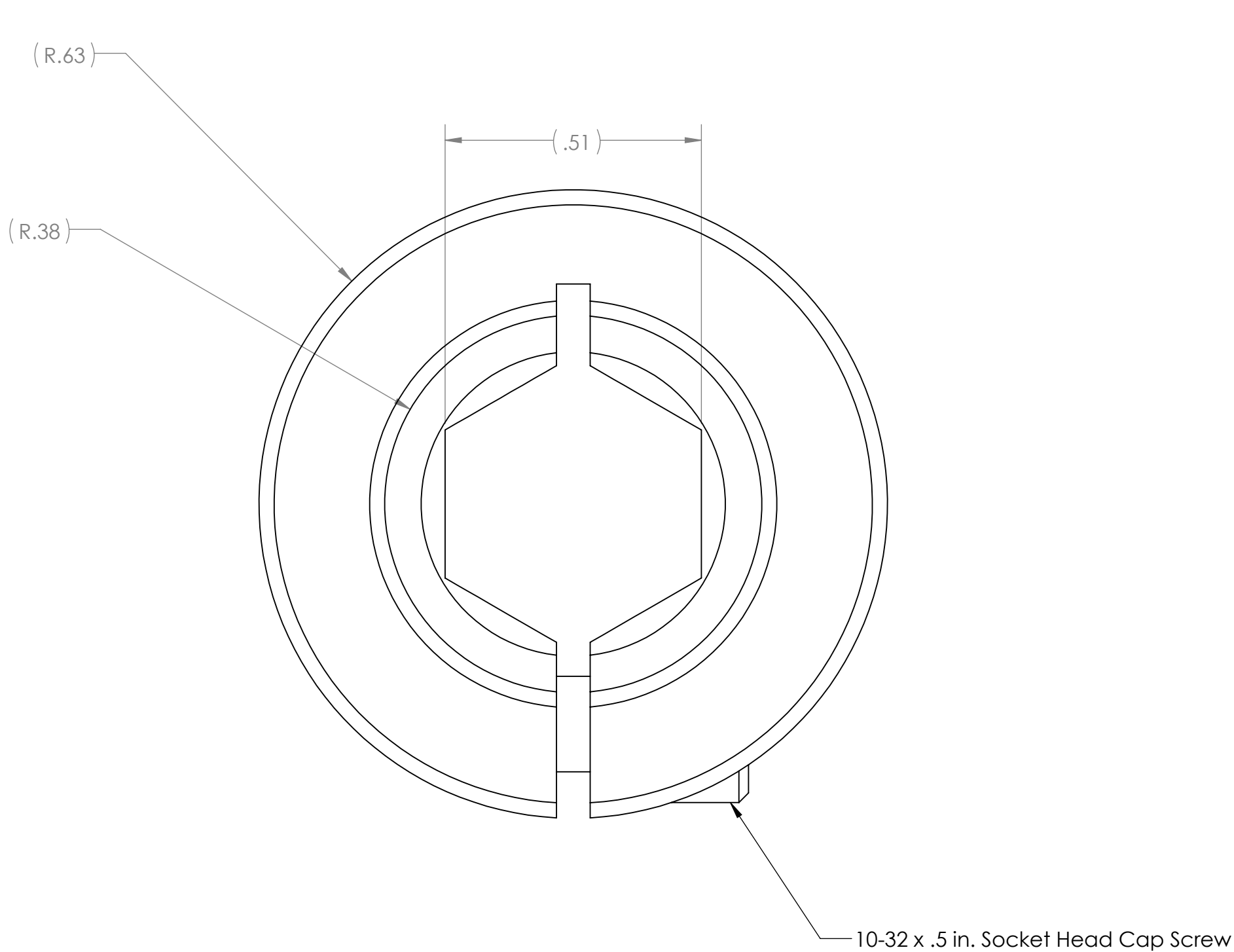
REV

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GE-22437

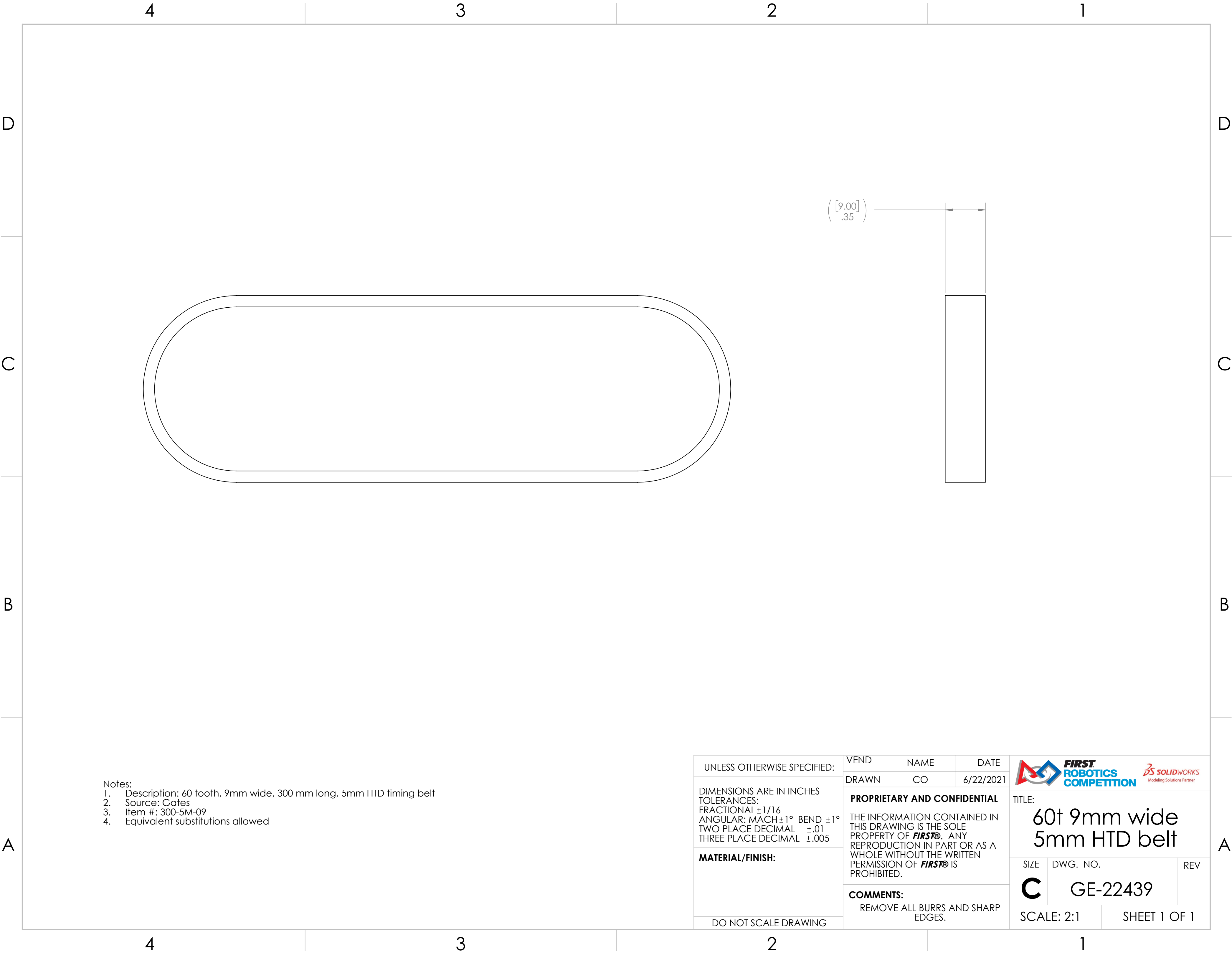
SCALE: 4:1

SHEET 1 OF 1





- Notes:
1. Description: 1/2 in. Hex HD Split Collar Clamp
 2. Source: AndyMark
 3. Item #: am-1526
 4. Equivalent substitutions allowed

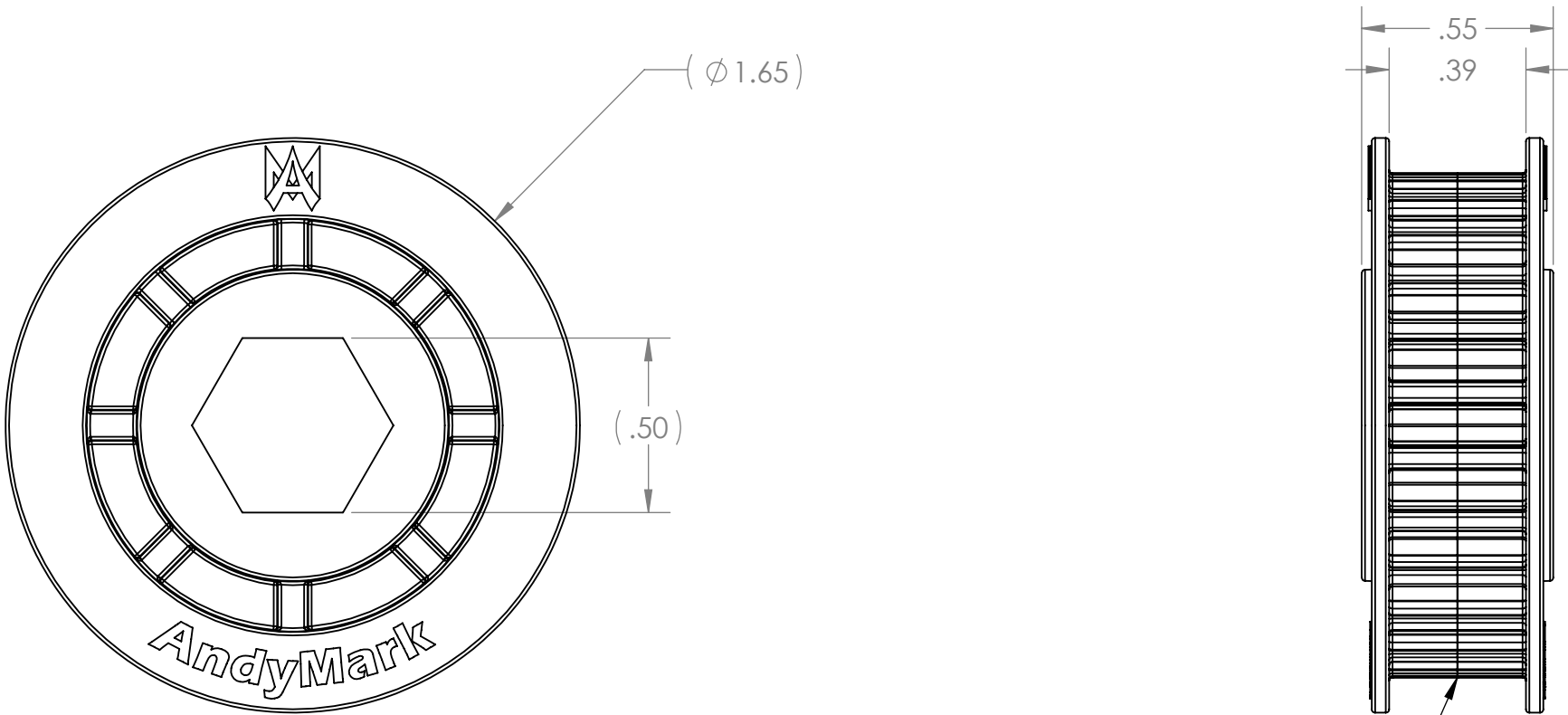
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	DRAWN	CO	6/22/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
			C	GE-22438		
			SCALE: 4:1		SHEET 1 OF 1	



- Notes:
- 1. Description: 60 tooth, 9mm wide, 300 mm long, 5mm HTD timing belt
 - 2. Source: Gates
 - 3. Item #: 300-5M-09
 - 4. Equivalent substitutions allowed



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: 60t 9mm wide 5mm HTD belt</div> <div><div>SIZE</div><div>C</div><div>SCALE: 2:1</div></div> <div><div>DWG. NO.</div><div>GE-22439</div><div>SHEET 1 OF 1</div></div> <div><div>REV</div><div></div></div>		
	DRAWN	CO	6/22/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					

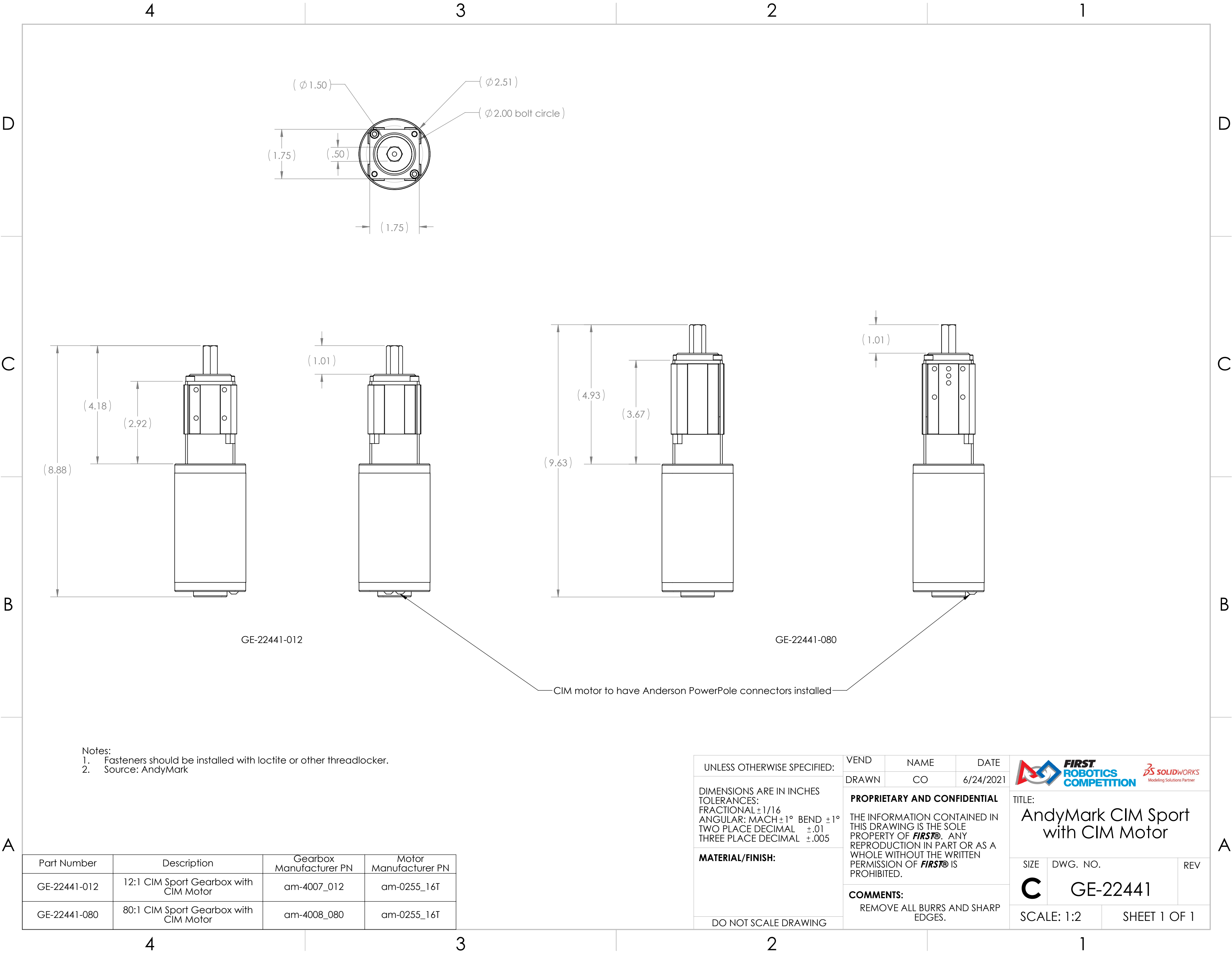
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Added note about use of glue to fasten halves together.	8/17/2021	CPO



A Use a few drops of cyanoacrylate glue to bond halves together.

- Notes:
- 1. Description: 24 tooth 0.5 in. Hex Bore 5mm HTD Pulley
 - 2. Source: AndyMark
 - 3. Item #: am-3403
 - 4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: 24 tooth 5mm HTD hex bore pulley</div> <table><tr><td>SIZE</td><td>DWG. NO.</td><td>REV</td></tr><tr><td>C</td><td>GE-22440</td><td>A</td></tr><tr><td colspan="2">SCALE: 2:1</td><td>SHEET 1 OF 1</td></tr></table>		SIZE	DWG. NO.	REV	C	GE-22440	A	SCALE: 2:1		SHEET 1 OF 1
	SIZE	DWG. NO.	REV											
	C	GE-22440	A											
SCALE: 2:1		SHEET 1 OF 1												
DRAWN	CO	6/22/2021												
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.														



- Notes:
1. Fasteners should be installed with loctite or other threadlocker.
 2. Source: AndyMark

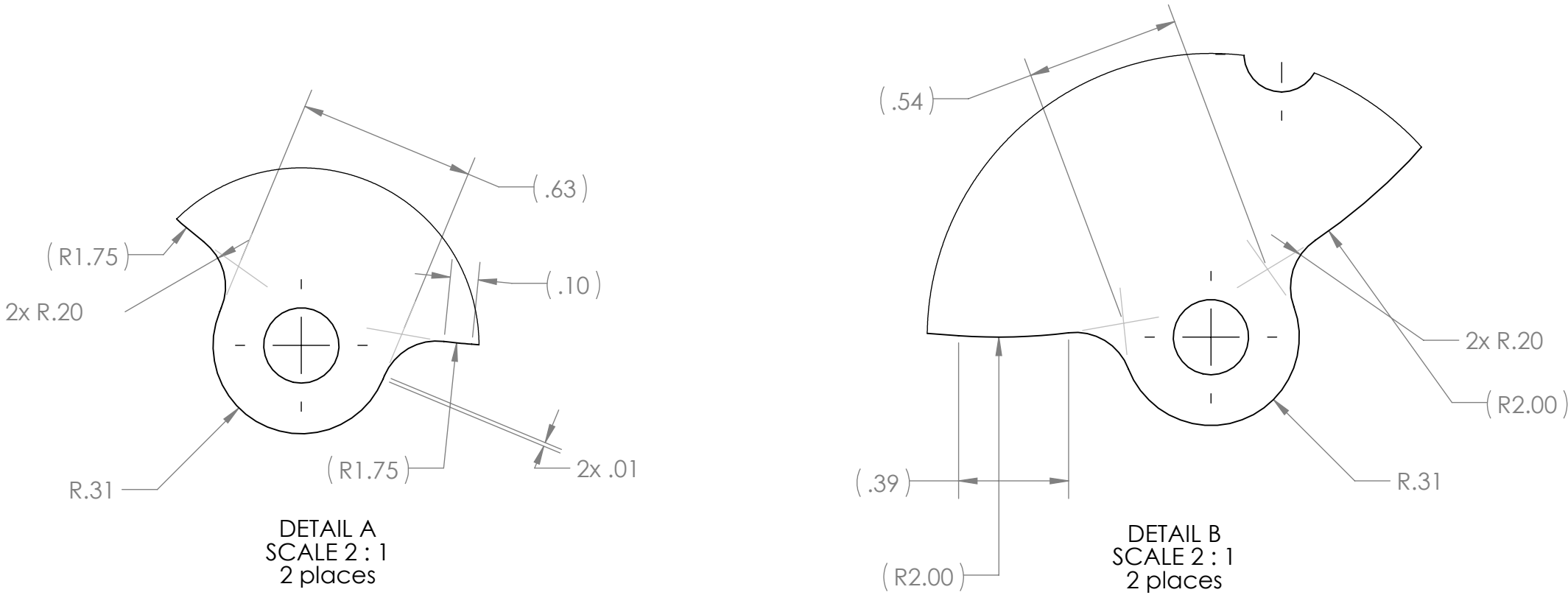
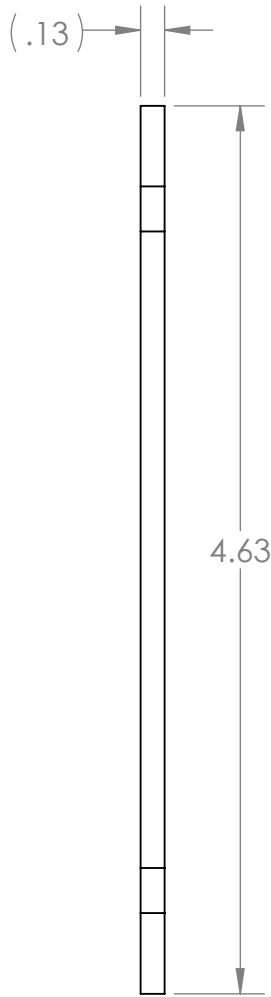
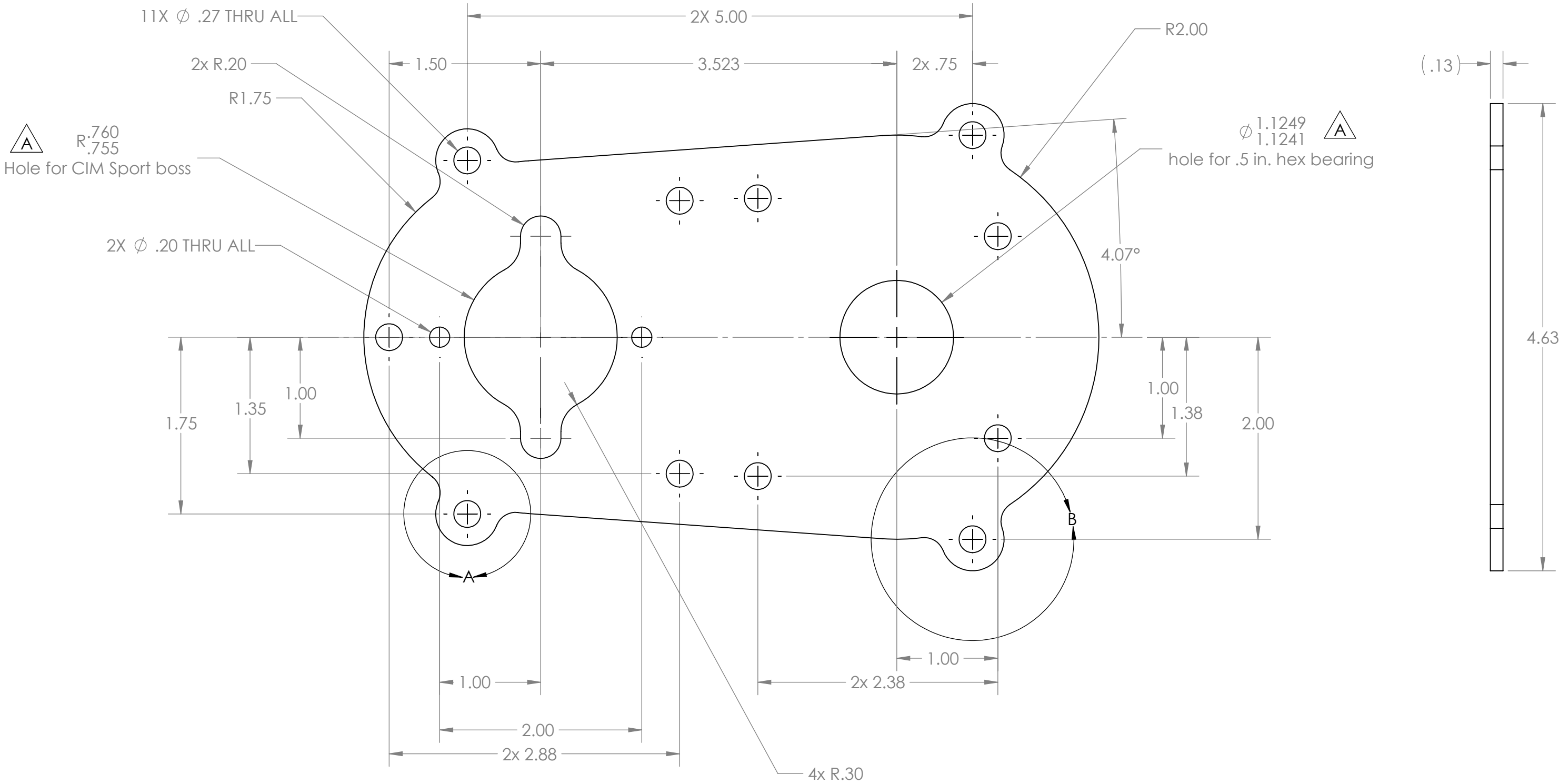
Part Number	Description	Gearbox Manufacturer PN	Motor Manufacturer PN
GE-22441-012	12:1 CIM Sport Gearbox with CIM Motor	am-4007_012	am-0255_16T
GE-22441-080	80:1 CIM Sport Gearbox with CIM Motor	am-4008_080	am-0255_16T

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$
MATERIAL/FINISH:
DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/24/2021
PROPRIETARY AND CONFIDENTIAL		
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COMMENTS:		
REMOVE ALL BURRS AND SHARP EDGES.		

		
TITLE: AndyMark CIM Sport with CIM Motor		
SIZE	DWG. NO.	REV
C	GE-22441	
SCALE: 1:2		SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2, D4	A	Adjusted hole size and tolerance for bearing and gearbox cutouts.	8/17/2021	CPO



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/8 thk. 5052 Aluminum
Sheet

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/22/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:
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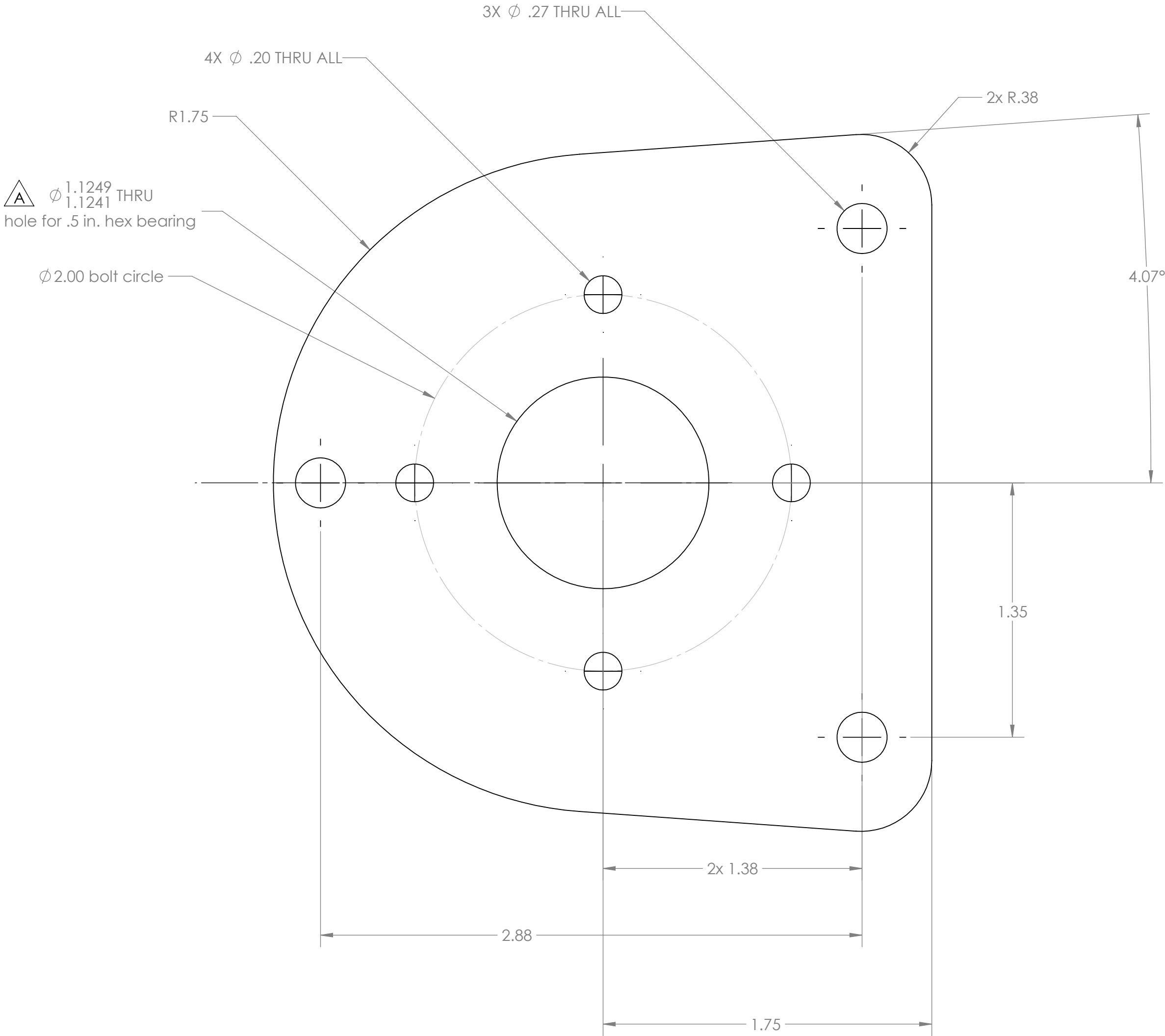


TITLE:
**Agitator
Baseplate**

SIZE	DWG. NO.	REV
C	GE-22442	A

SCALE: 1:1 SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D4	A	Adjusted hole size and tolerance for bearing cutout.	8/17/2021	CPO



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/8 thk. 5052 Aluminum
Sheet

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/23/2021

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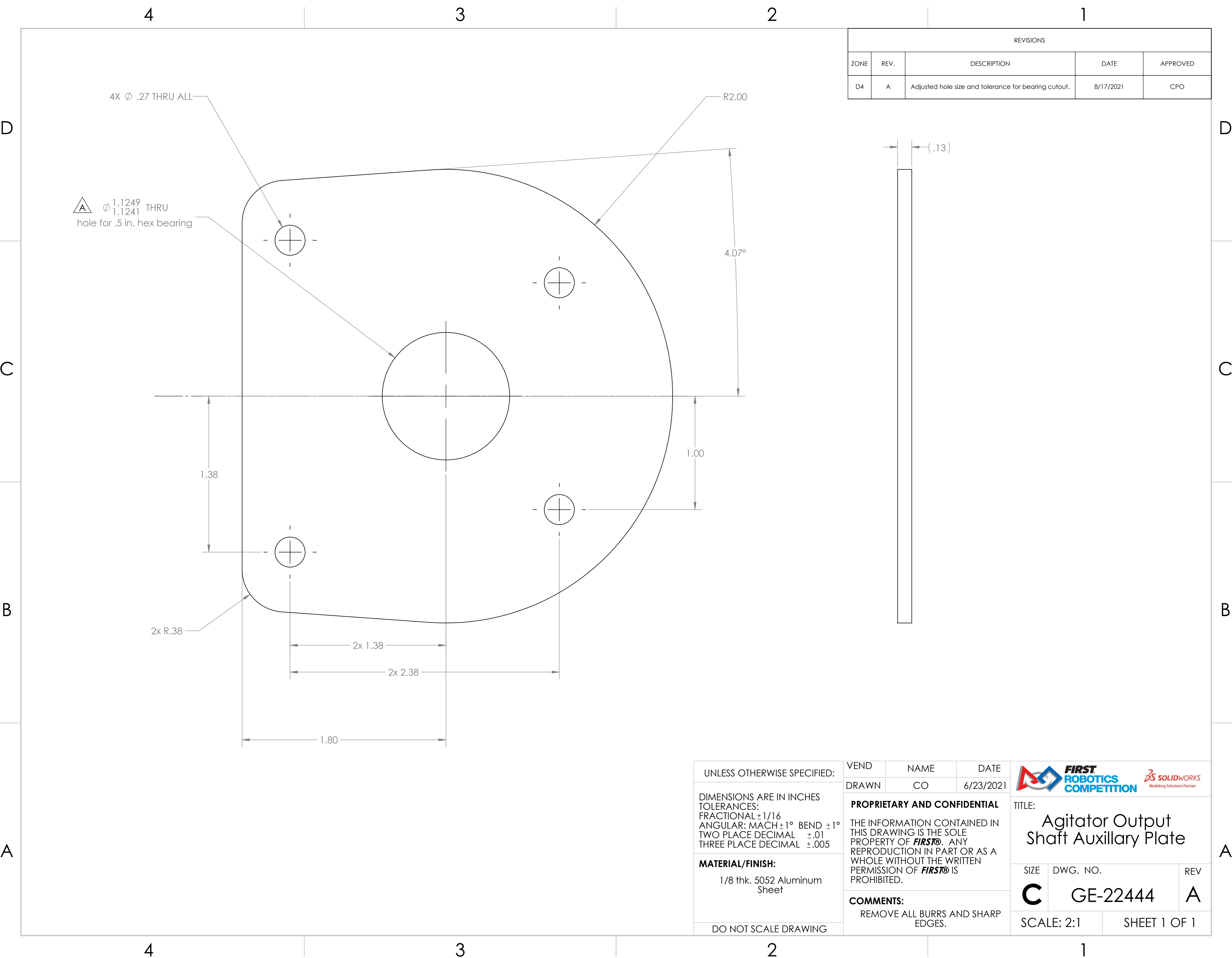
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



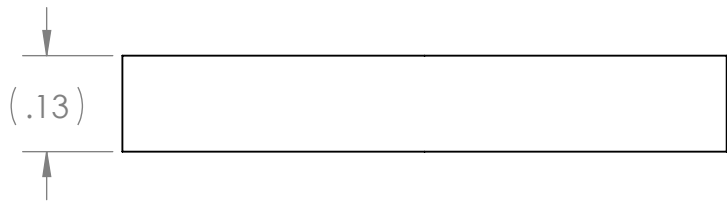
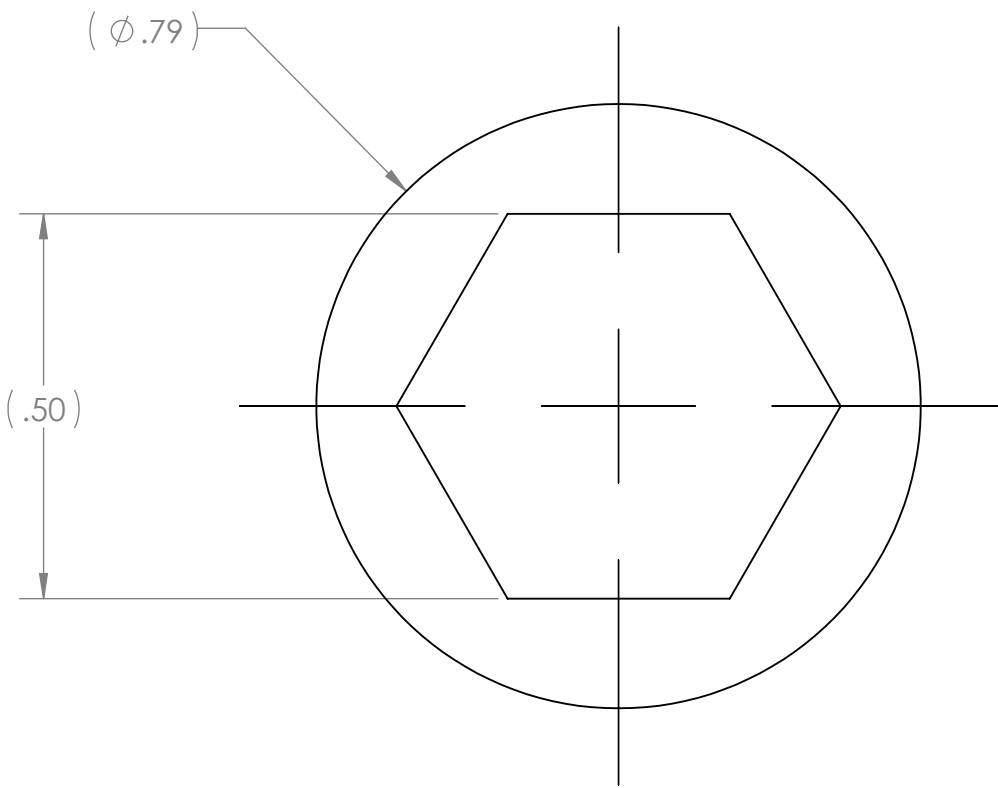
TITLE:
**Agitator Gearbox
Auxillary Plate**

SIZE	DWG. NO.	REV
C	GE-22443	A

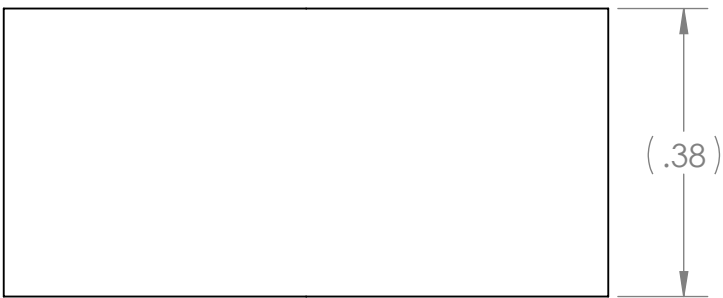
SCALE: 2:1 SHEET 1 OF 1



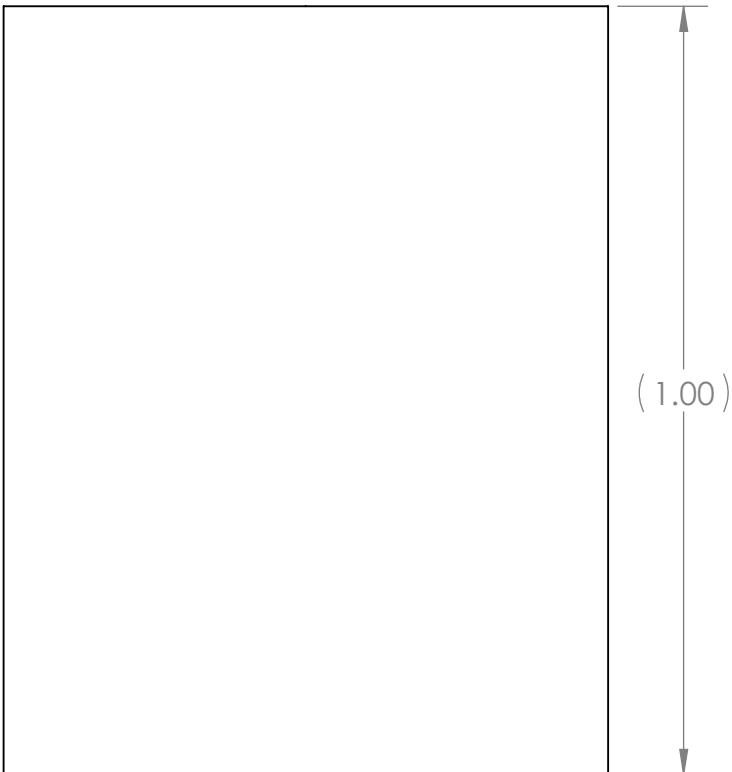
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, B2	A	Added new spacer length.	11/23/2021	CPO



GE-22445-125



GE-22445-375





GE-22445-1000

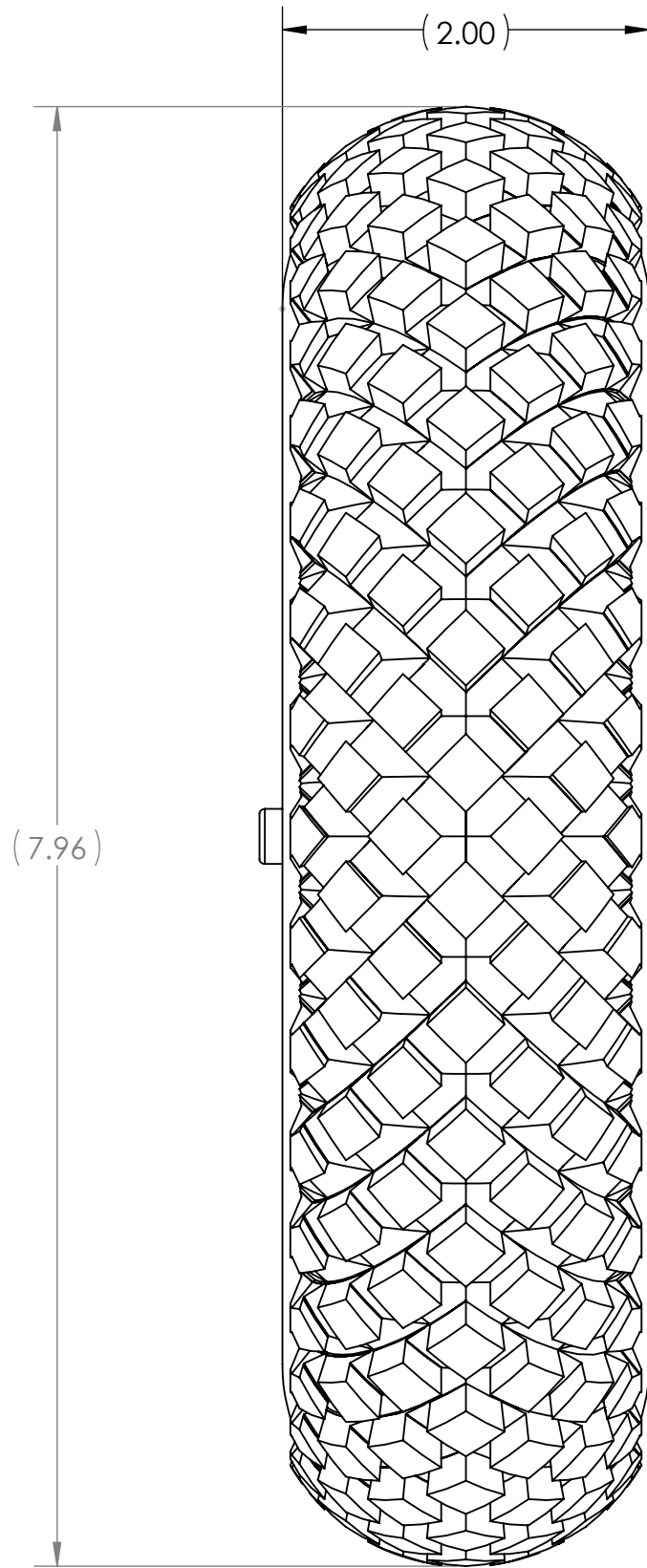
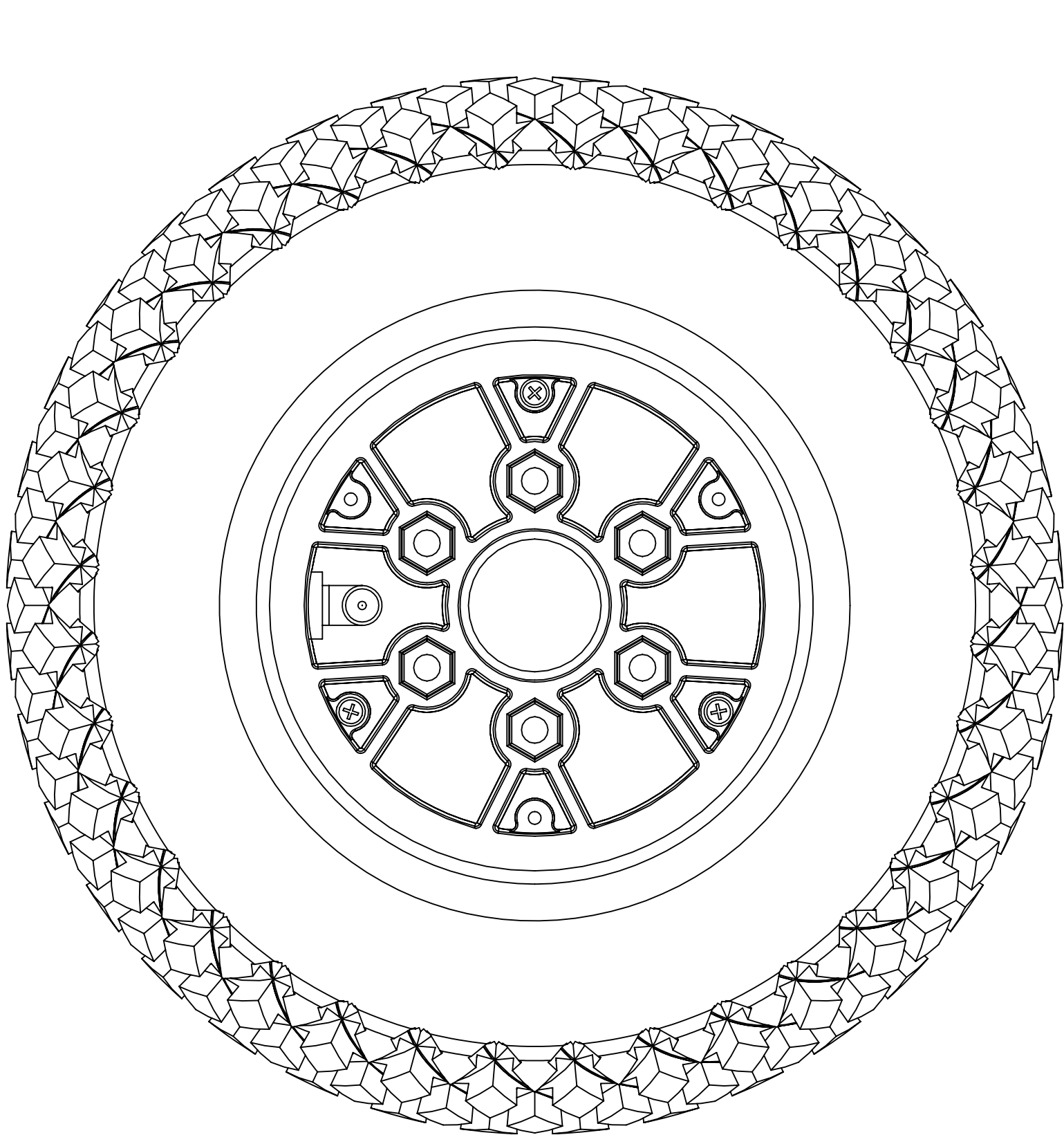
Notes:

1. Source: AndyMark
2. Equivalent substitutions allowed

Part Number	Description	Manufacturer PN
GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	am-3948-125
GE-22445-375	1/2 in. hex molded spacer, 3/8 in. long	am-3948-375
GE-22445-1000	1/2 in. hex molded spacer, 1 in. long	am-3948-1000



UNLESS OTHERWISE SPECIFIED:		VEND		NAME		DATE	
		DRAWN		CO		6/24/2021	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: Black PC							
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
		 		TITLE: <div>1/2 in. hex molded spacer</div>			
		SIZE <div>C</div>		DWG. NO. <div>GE-22445</div>		REV <div>A</div>	
		SCALE: 4:1		SHEET 1 OF 1			



- Notes:
- 1. Description: 8 in. Pneumatic Wheel Kit
 - 2. Source: AndyMark
 - 3. Item #: am-0970
 - 4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	6/24/2021

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
8 in. Pneumatic Wheel

SIZE	DWG. NO.	REV
C	GE-22446	

SCALE: 1:1 SHEET 1 OF 1

4

3

2

1

D

D

C

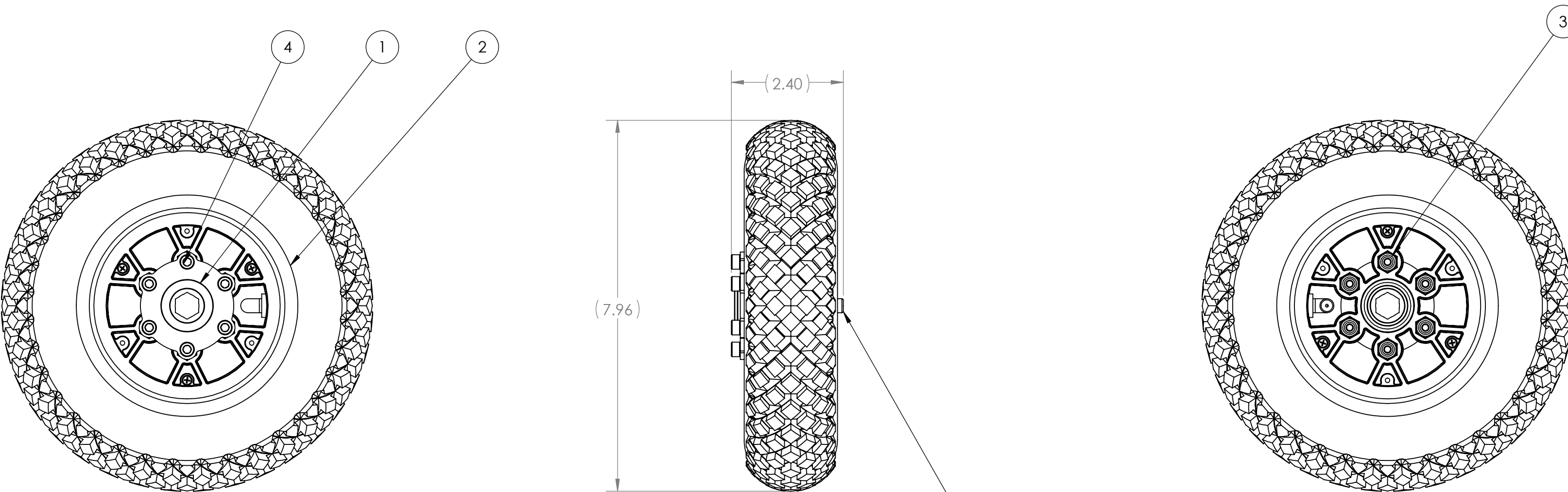
C

B

B

A

A



Pneumatic wheel inlet on opposite face as hub is mounted to.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22436	AndyMark 1/2 in. Hex Hub	1
2	GE-22446	8 in. Pneumatic Wheel	1
3	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	6
4	socket_hex_10_32_2_partial	Socket Head Screw, 10-32 x 2" long, partially threaded	6

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

CO

6/24/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
**High Agitator
Wheel with Hub**

SIZE DWG. NO. REV

C GE-22447

SCALE: 1:2 SHEET 1 OF 1

4

3

2

1

4

3

2

1

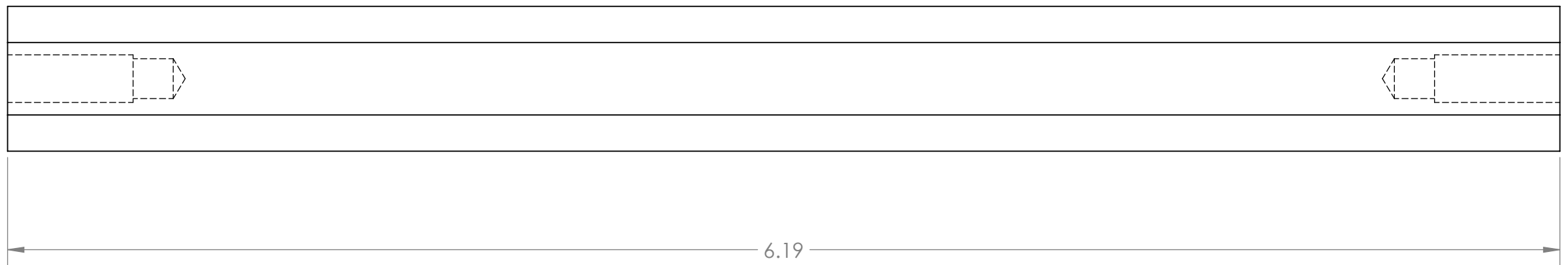
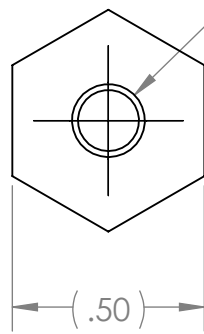
D



C

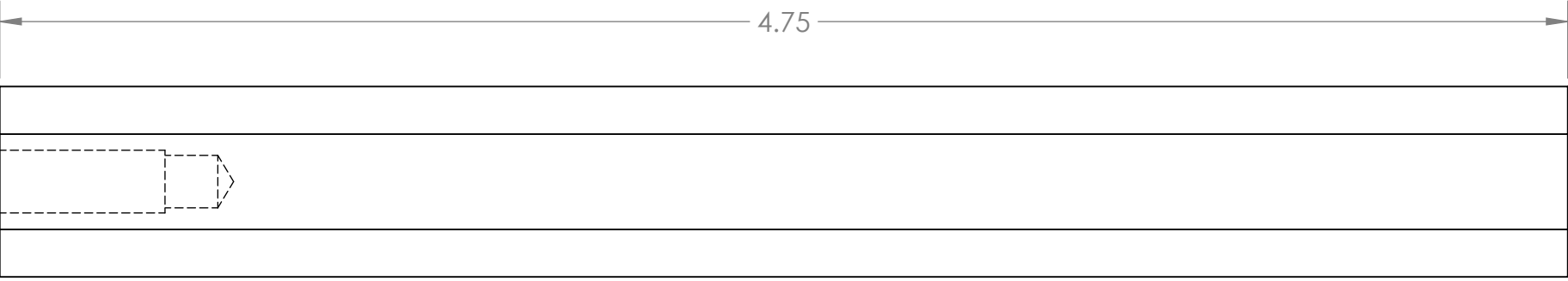
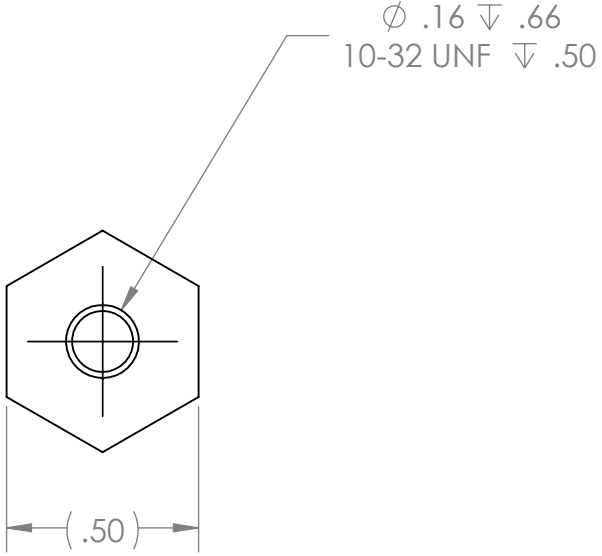
B



A

2X \varnothing .16 ∇ .66
10-32 UNF ∇ .50

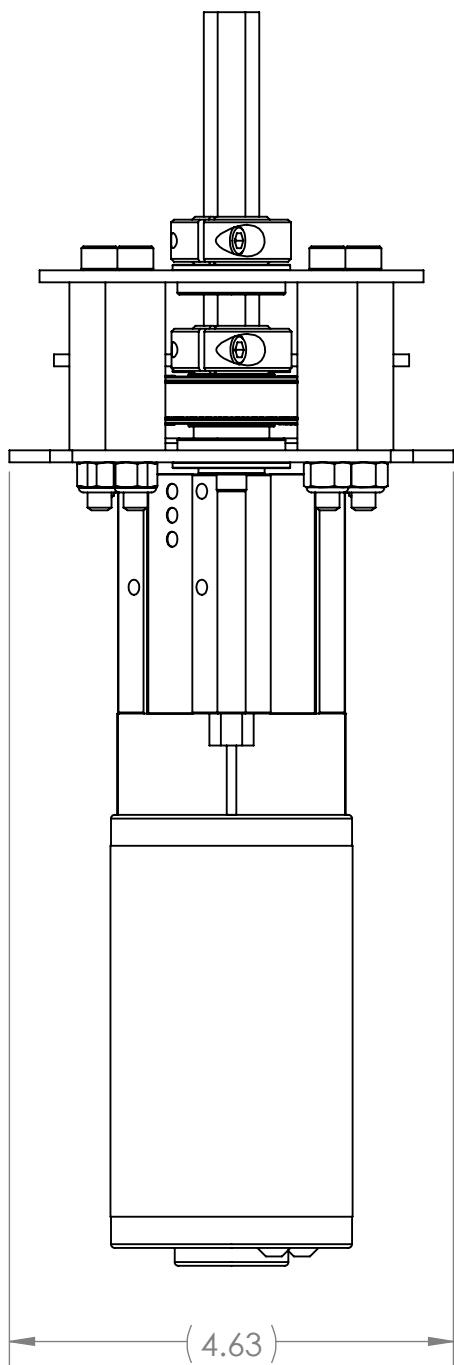
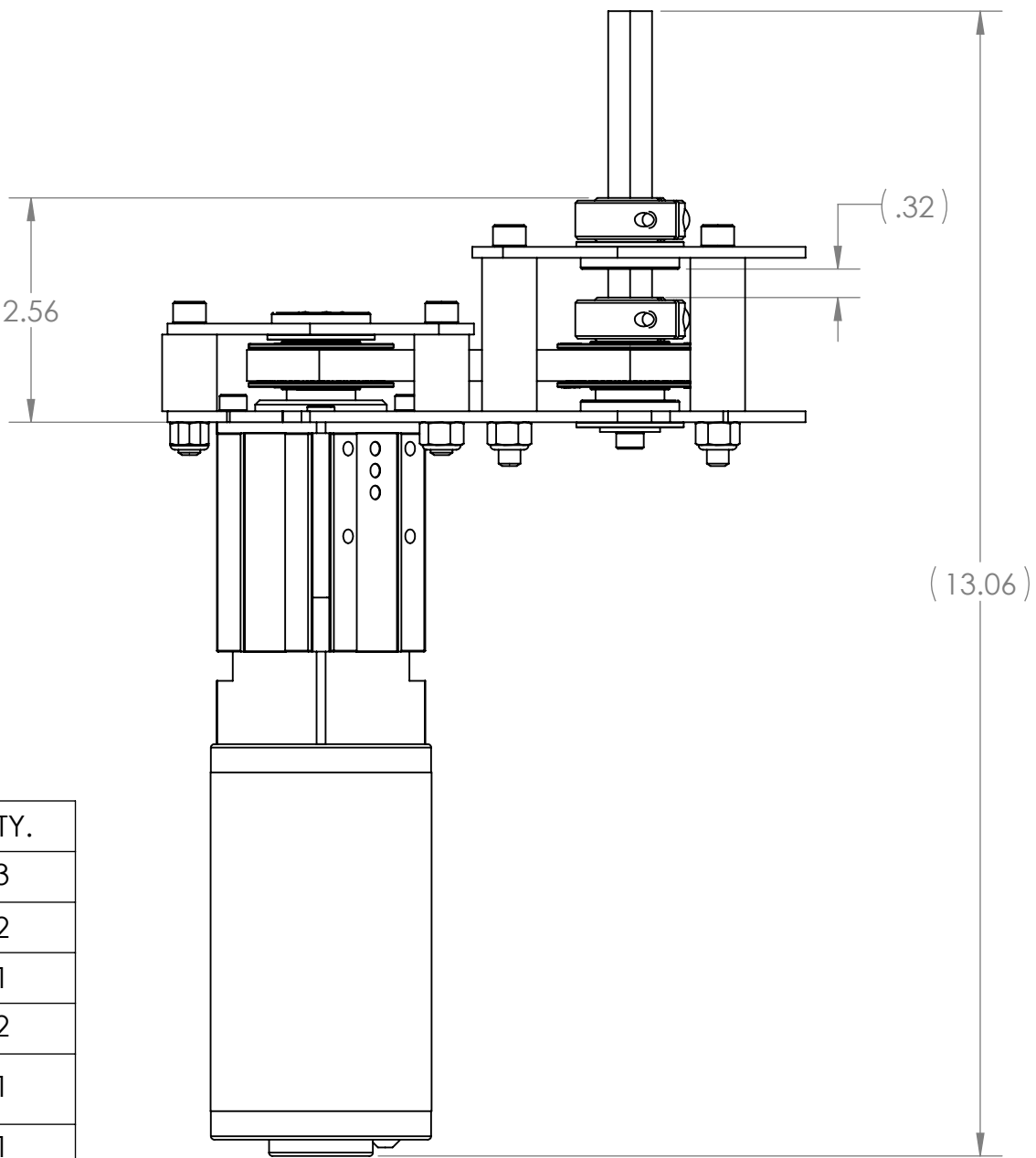
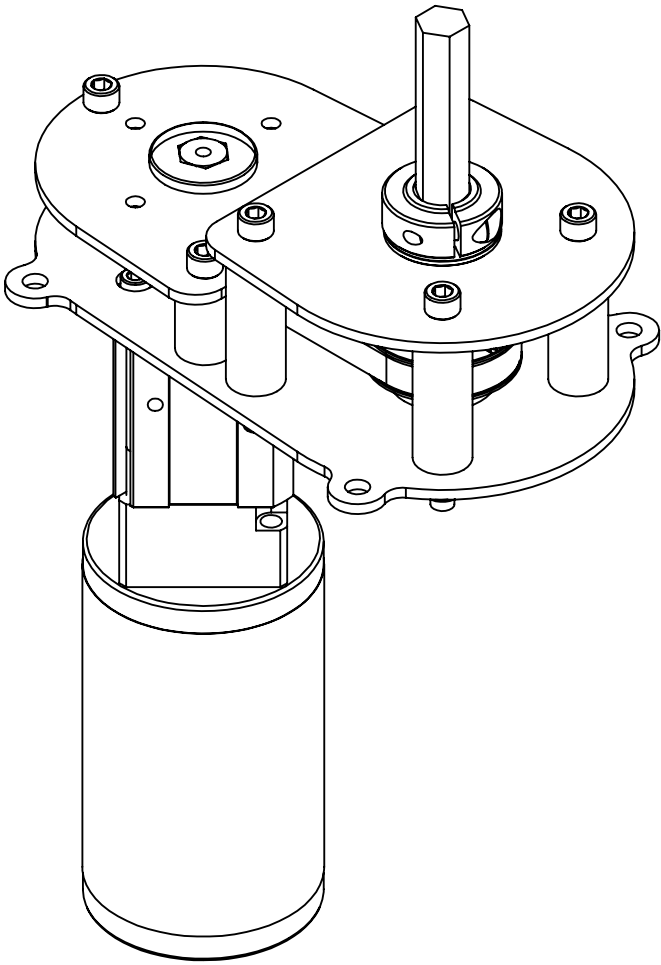
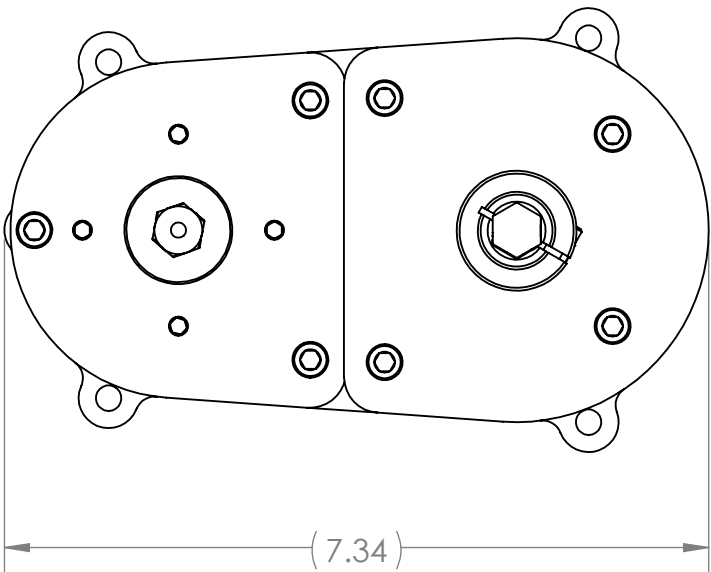


UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	 FIRST ROBOTICS COMPETITION  SOLIDWORKS Modeling Solutions Partner	
		DRAWN	CO	6/24/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: <h1 style="text-align: center;">High Agitator Drive Hex Shaft</h1>	
MATERIAL/FINISH: 1/2" Hex shaft, 7075 aluminum					SIZE	DWG. NO.
					C	GE-22448
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 2:1	
					SHEET 1 OF 1	





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: 1/2" Hex shaft, 7075 aluminum DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: <h1>Low Agitator Drive Hex Shaft</h1></div><div><div>SIZE</div><div>DWG. NO.</div><div>REV</div><div><div>C</div><div>GE-22449</div></div><div><div>SCALE: 2:1</div><div>SHEET 1 OF 1</div></div></div></div>
	DRAWN	CO	6/24/2021	
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-D4, 3-D4	A	Added notes for use of glue on pulleys. Updates made to geometry of GE-22442, GE-22443, GE-22444	8/17/2021	CPO
A3	B	Two fasteners changed from hex head to socket head bolts.	10/27/2021	CPO



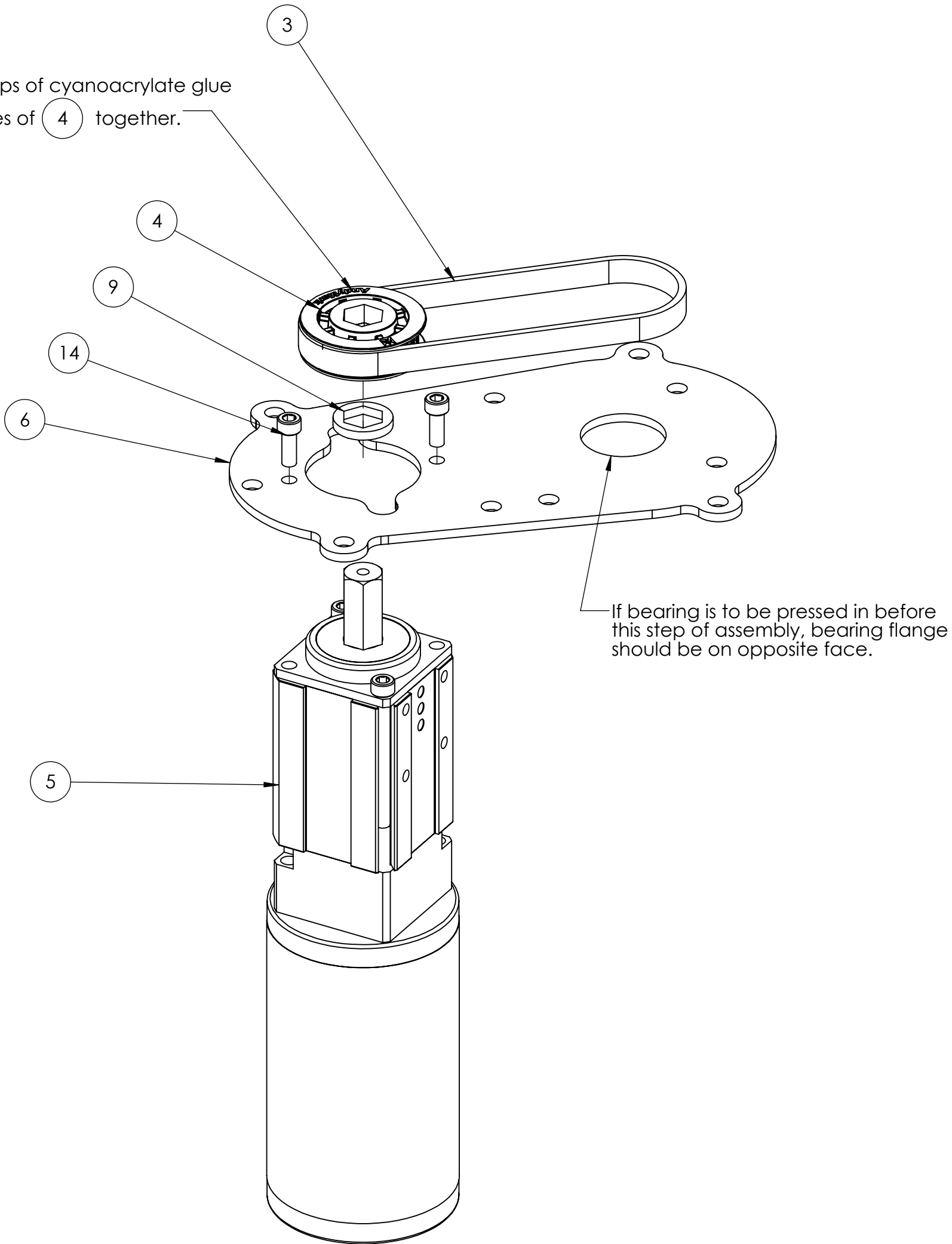
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22437	1/2 in. Hex Bearing	3
2	GE-22438	1/2 in. Hex Shaft Collar	2
3	GE-22439	60t 9mm wide 5mm HTD belt	1
4	GE-22440	24 tooth 5mm HTD hex bore pulley	2
5	GE-22441-080	80:1 CIM Sport Gearbox with CIM Motor	1
6	GE-22442	Agitator Baseplate	1
7	GE-22443	Agitator Gearbox Auxillary Plate	1
8	GE-22444	Agitator Output Shaft Auxillary Plate	1
9	GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	2
10	GE-22449	Low Agitator Drive Hex Shaft	1
11	socket_hex_.25_20_1.5_partial	Socket Head Screw, 1/4-20 x 1.5" long, partially threaded	3
12	socket_hex_.25_20_2.5_partial	Socket Head Screw, 1/4-20 x 2.5" long, partially threaded	4
13	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	7
14	socket_hex_10_32_.5_nylon	Socket Head Screw, 10-32 x 0.5" long, with nylon patch	3
15	spacer_.252_.625_1.75	Spacer, .252 ID, .625 OD, 1.75 long	4
16	spacer_.252_.625_.875	Spacer, .252 ID, .625 OD, .875 long	3
17	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	1

 B

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>	
	DRAWN	CO	6/24/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL			TITLE: Low Agitator Drive Assembly	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:	COMMENTS:			SIZE	
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.	
				REV	
				C	GE-22450
				B	
				SCALE: 1:2	
				SHEET 1 OF 4	

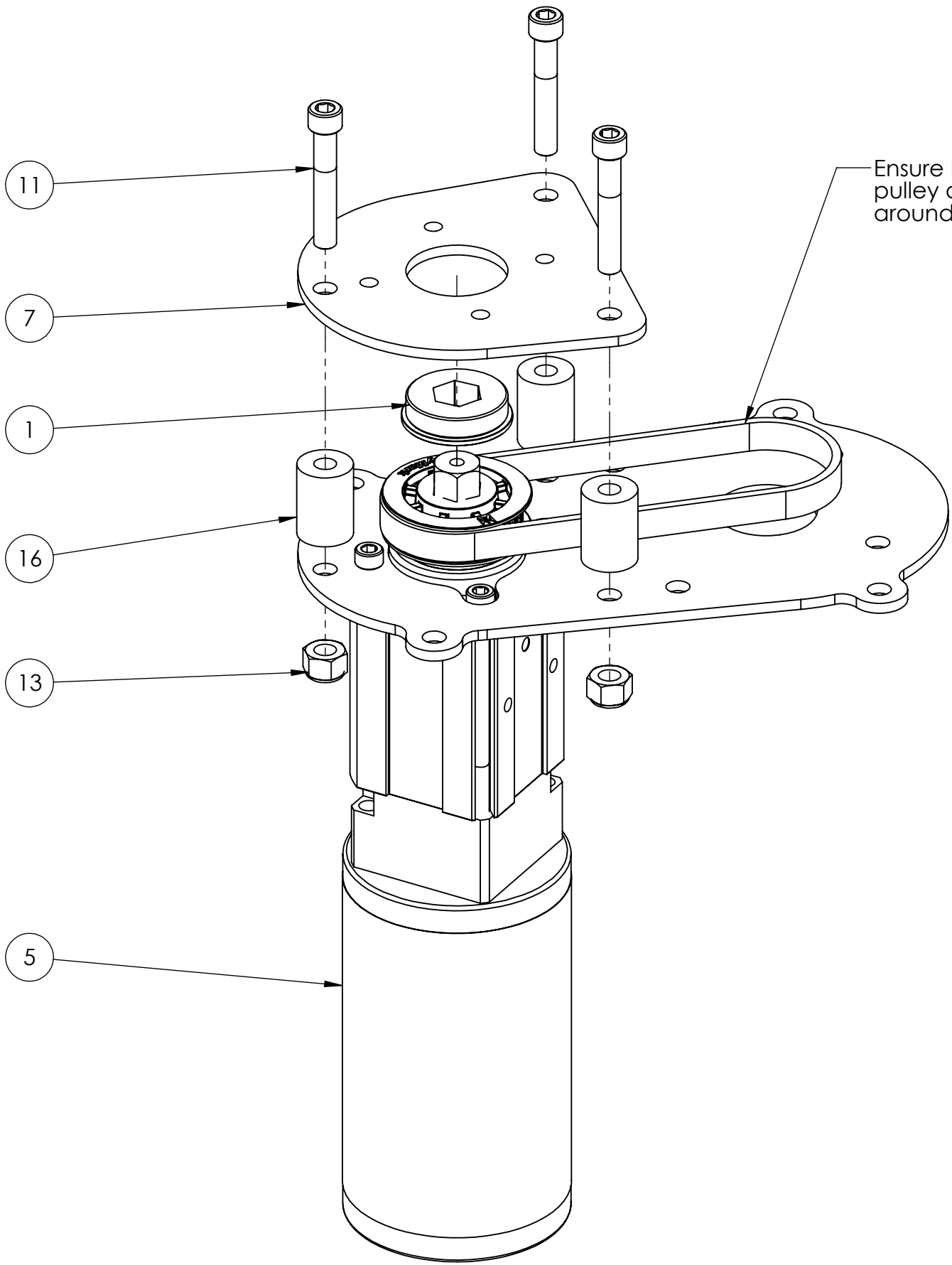


Use a few drops of cyanoacrylate glue to bond halves of 4 together.





Notes:

1. Attach 5 to 6 using 14.
2. Slide 9 and 4 in order onto the shaft of 5.
3. Place 3 onto 4.



Notes:

1. Insert or press 1 into 7.
2. Slide 1 7 onto the shaft of 5, noting flange orientation.
3. Attach 1 7 to the assembly using 16 to space the plates and 11 and 13 to fasten. Be careful of belt routing.

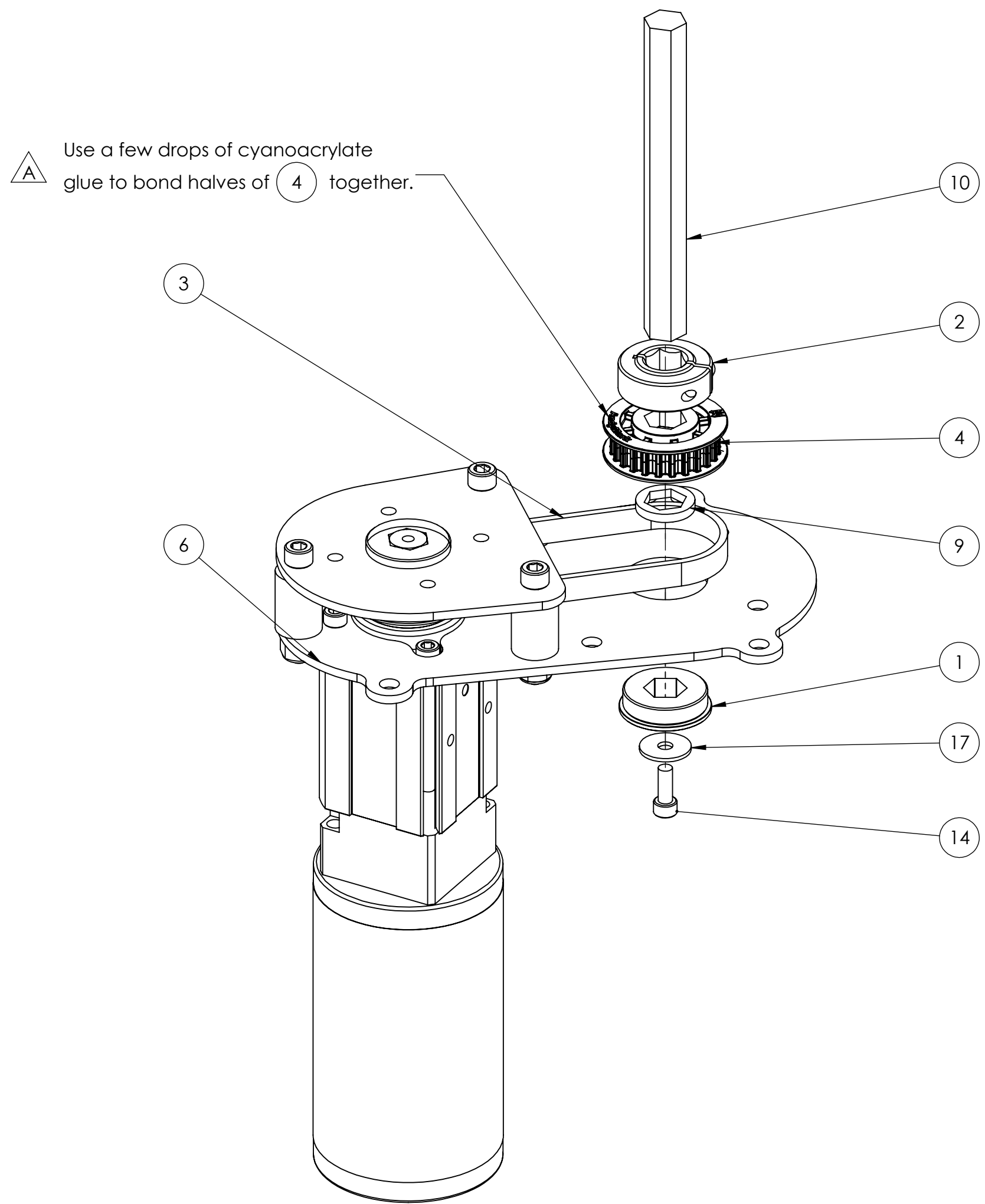
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Low Agitator Drive Assembly</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div><div>C</div><div>GE-22450</div><div>B</div></div> <div><div>SCALE: 2:3</div><div>SHEET 2 OF 4</div></div>
	DRAWN	CO	6/24/2021	
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			

D

C

B

A



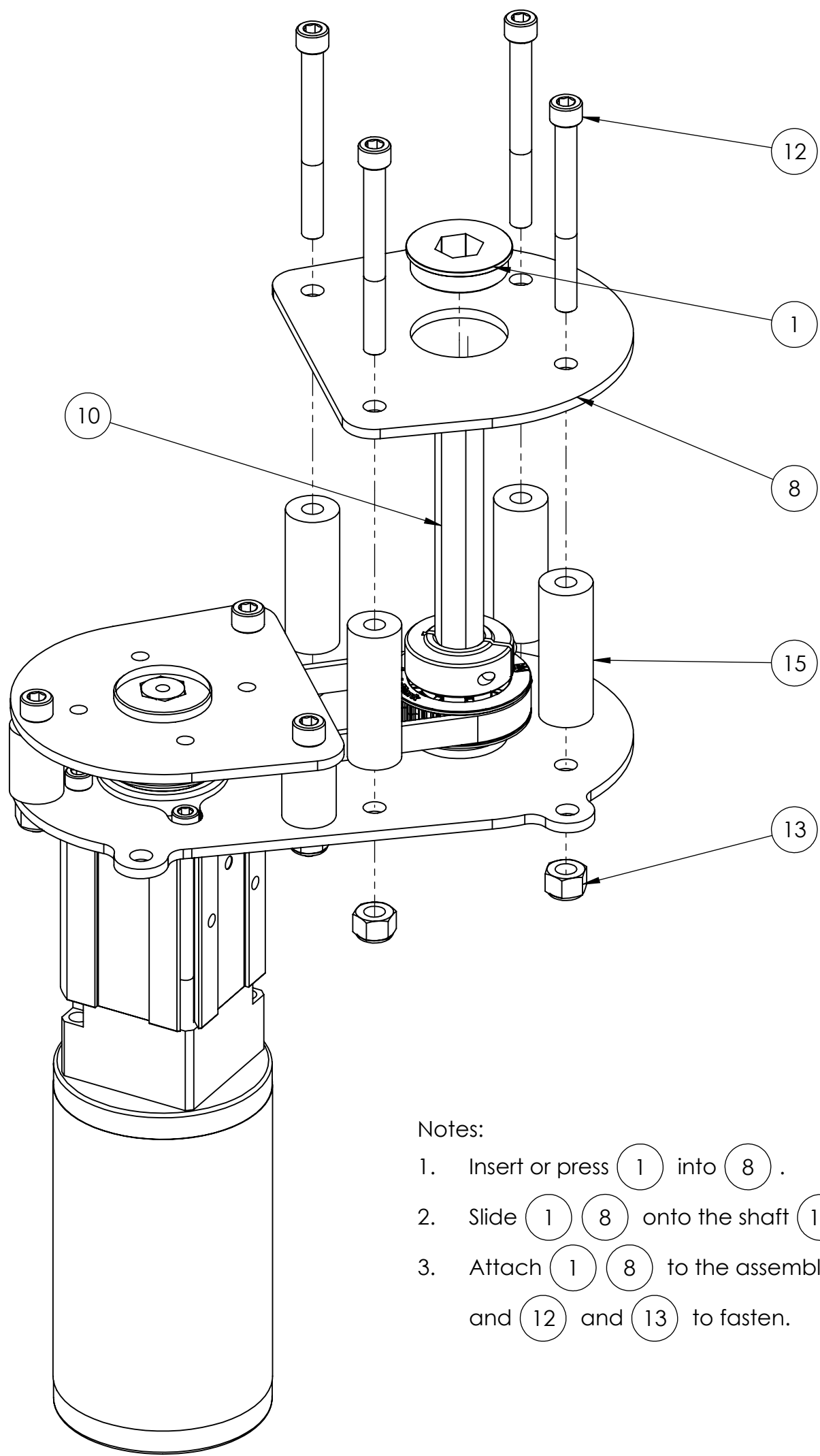
- Notes:
1. If not already done, press or insert (1) into (6), noting flange orientation.
 2. Slide items (2), (4), and (9) onto (10), being careful of order, and note orientation of (10) as only one side is tapped.
 3. Slide shaft into place, aligning (3) onto (4), then aligning (10) with (1).
 4. Attach (14) and (17) to (10). (17) must be large enough diameter to prevent shaft being pulled past bearing.
 5. With bottom of (10) coincident with bottom of (1), and (2) (4) (9) all flush to each other and (1), tighten set screw on (2).

D


C

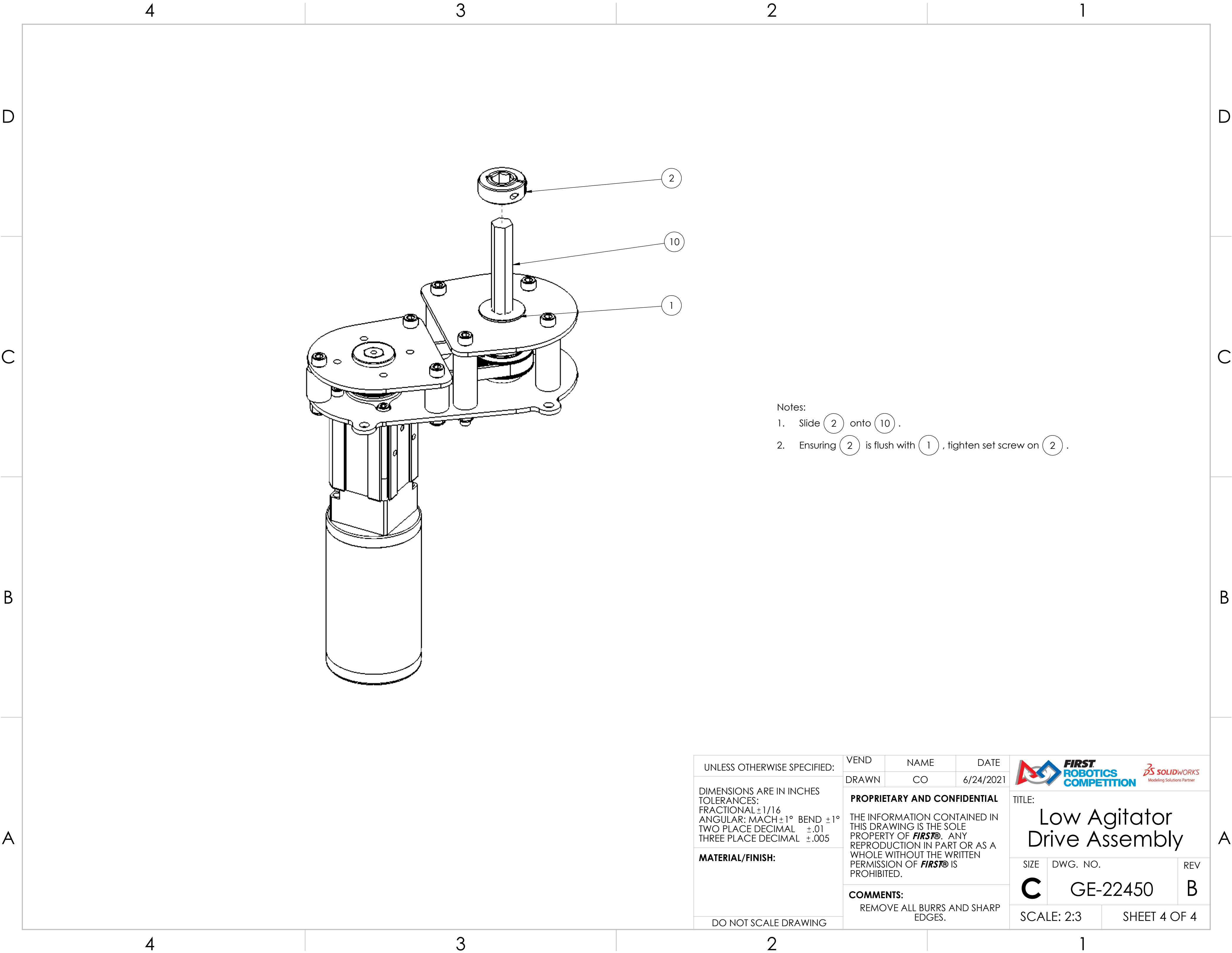
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A





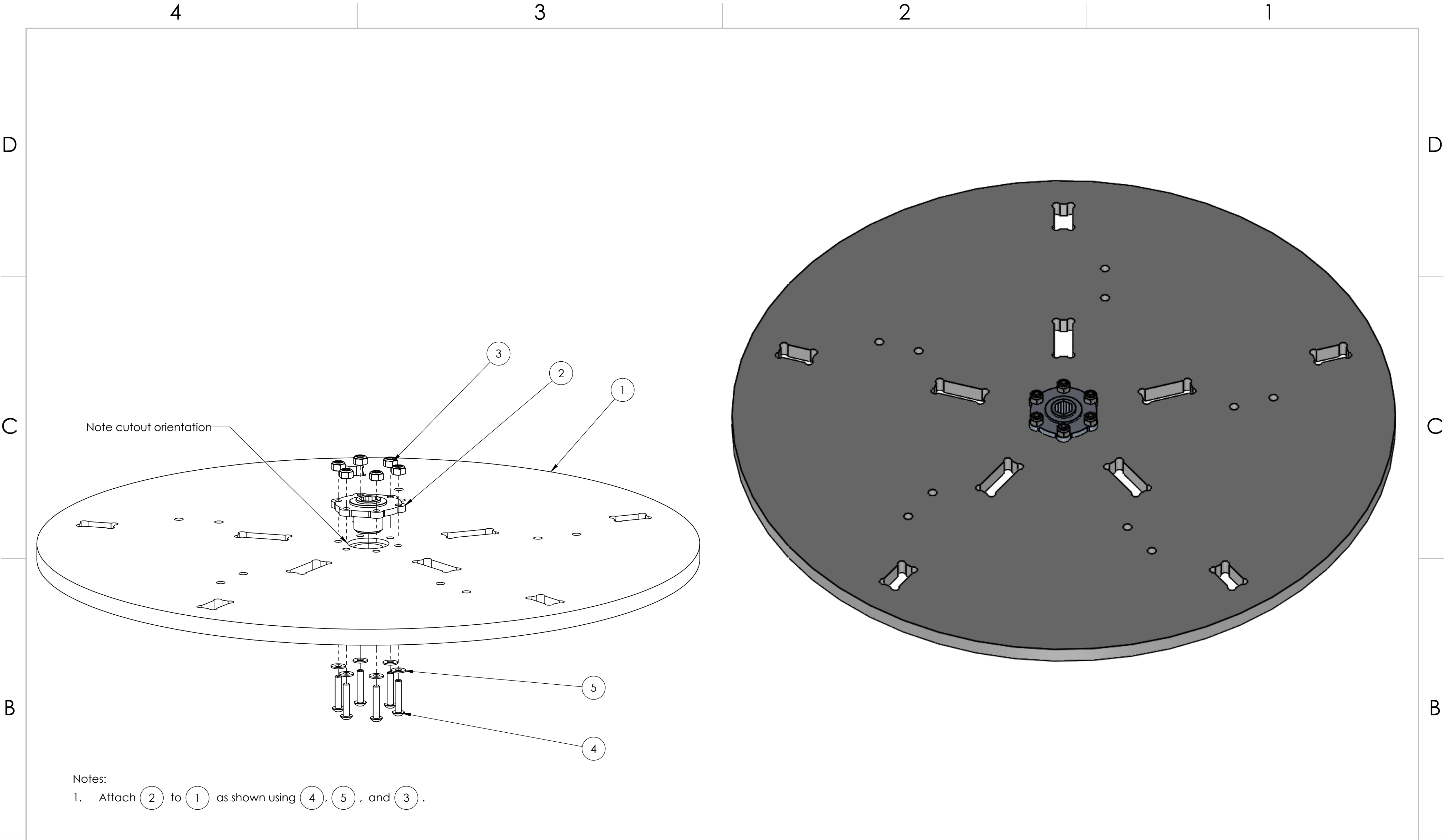
- Notes:
1. Insert or press (1) into (8).
 2. Slide (1) (8) onto the shaft (10), noting flange orientation.
 3. Attach (1) (8) to the assembly using (15) to space the plates and (12) and (13) to fasten.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Low Agitator Drive Assembly</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div><div>C</div><div>GE-22450</div><div>B</div></div> <div><div>SCALE: 2:3</div><div>SHEET 3 OF 4</div></div>
	DRAWN	CO	6/24/2021	
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- Notes:
- 1. Slide 2 onto 10 .
 - 2. Ensuring 2 is flush with 1 , tighten set screw on 2 .

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div>	
	DRAWN	CO	6/24/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Low Agitator Drive Assembly	
SIZE		DWG. NO.		REV	
C		GE-22450		B	
SCALE: 2:3			SHEET 4 OF 4		



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22434	Low Agitator Wheel Base	1
2	GE-22436	AndyMark 1/2 in. Hex Hub	1
3	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	6
4	round_hex_10_32_1_full	Round Head Hex, 10-32 x 1.00" long, fully threaded	6
5	washer_flat_10	Flat Washer for #10 Screw	6

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	CO	12/29/2021
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Low Agitator Wheel Base Assembly		
SIZE	DWG. NO.	REV
C	GE-22451	
SCALE: 1:2		SHEET 1 OF 1

D

C

B

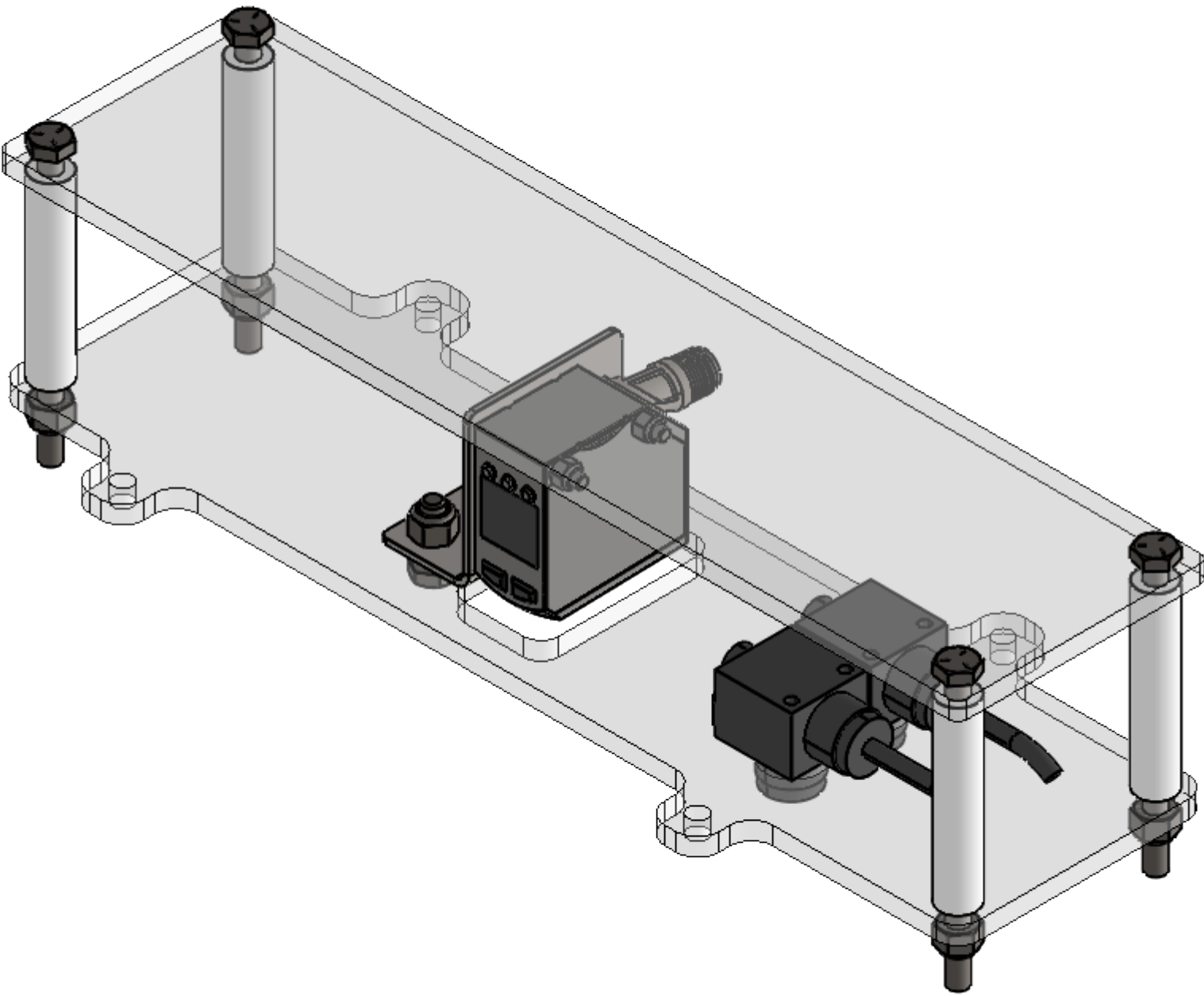
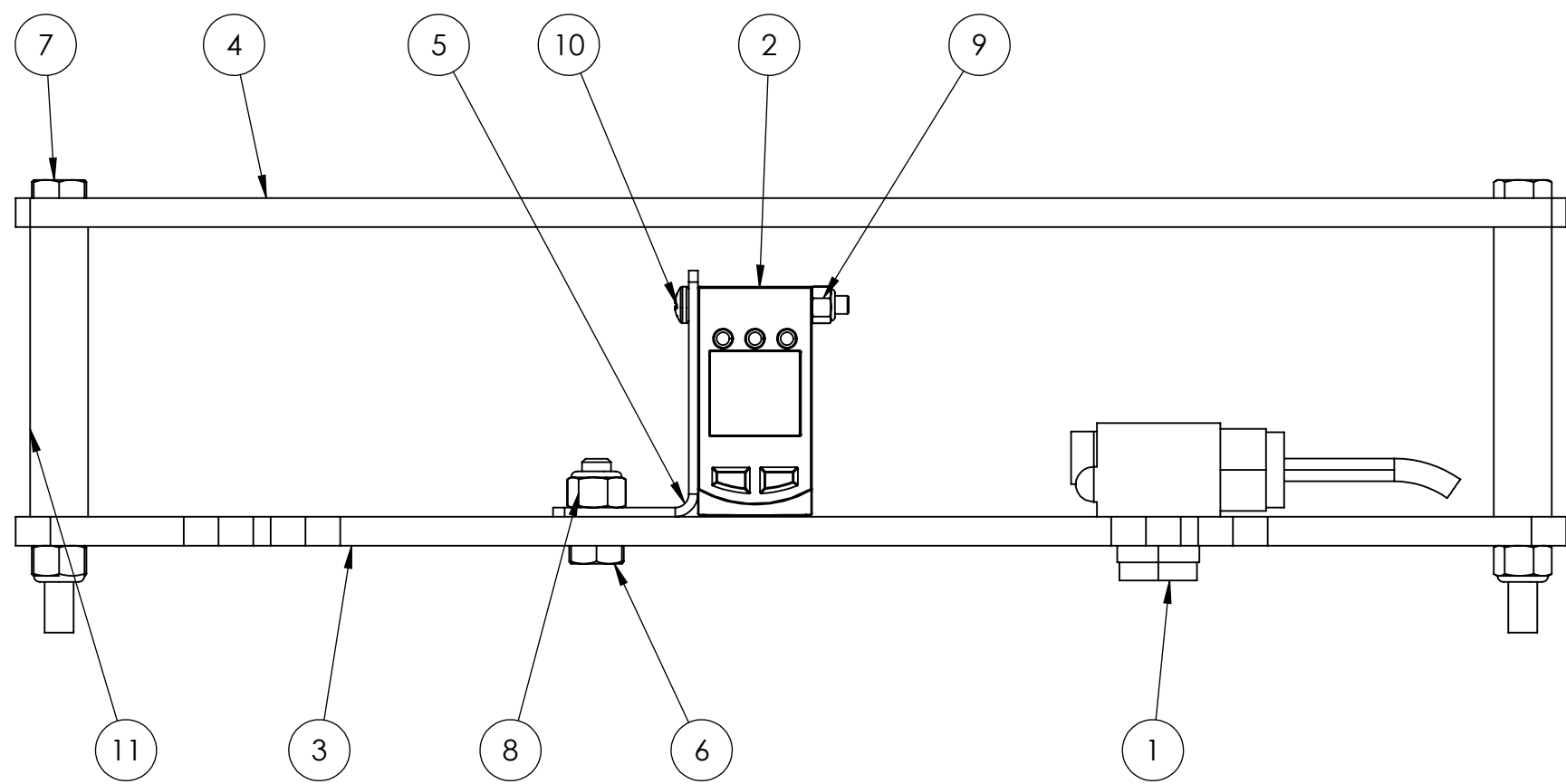
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D



C

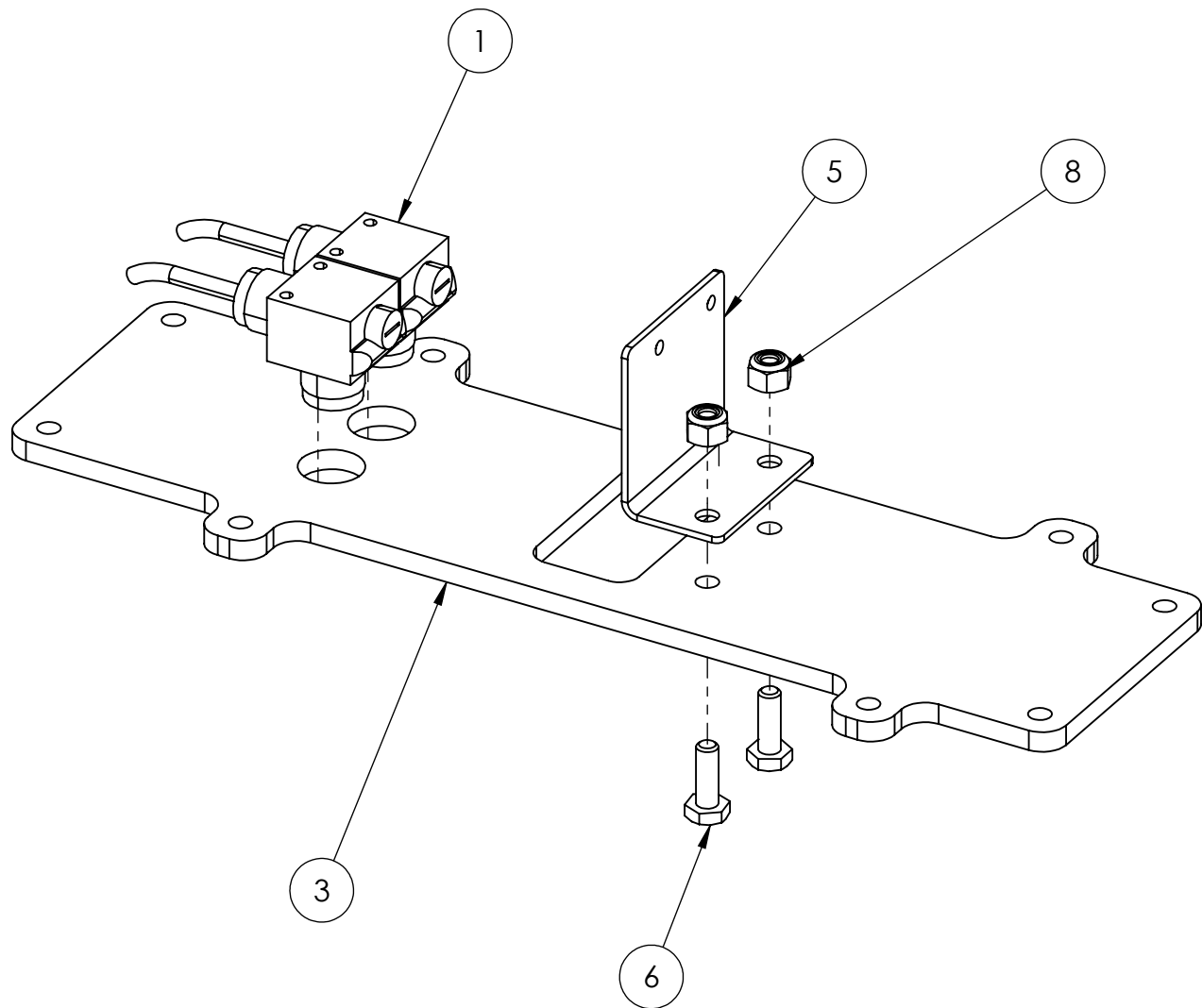
B

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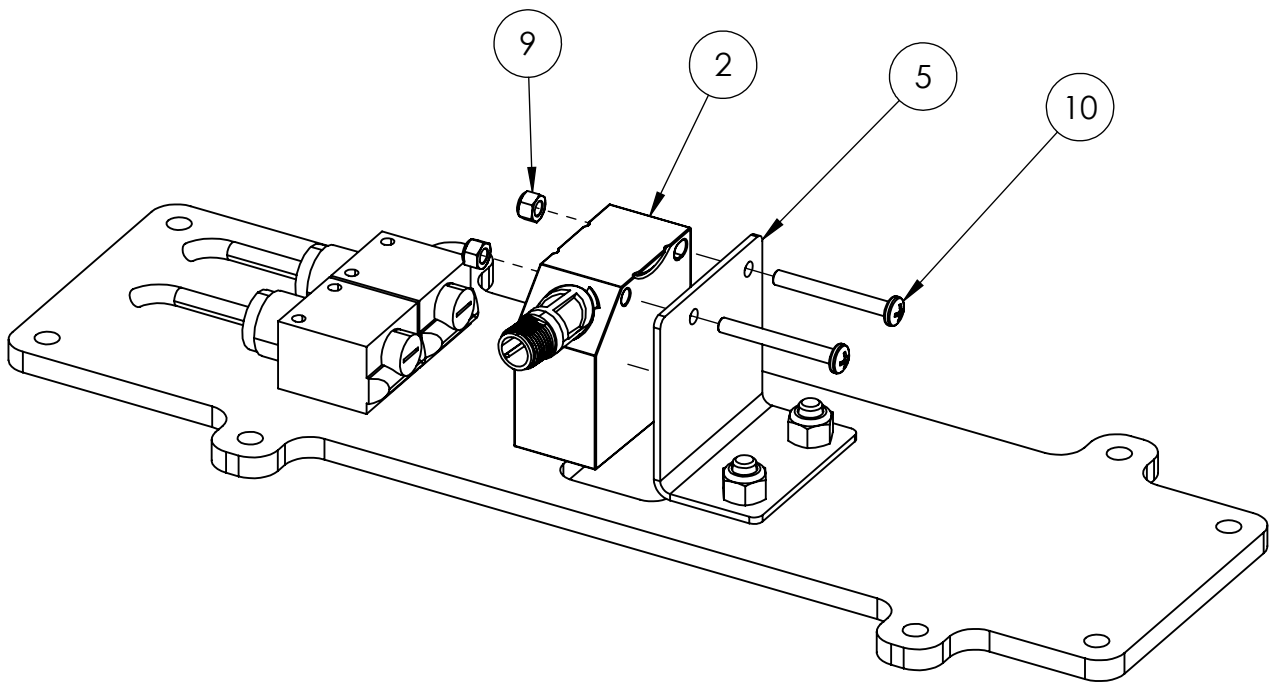


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	42ef_dc	RightSight Sensor	2
2	46CLR	46CLR	1
3	GE-22462	Sensor Plate	1
4	GE-22463	Sensor Shield	1
5	GE-22464	Color Sensor Bracket	1
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
7	hex_.25_20_3.75_partial	Steel Hex Head Bolt, 1/4"-20 x 3.75", partially threaded	4
8	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6
9	nylock_M4	Nylock M4	2
10	Pan_phil_M4_35	Pan Head Phillips Drive, M4 x 35mm Long, Fully Threaded	2
11	spacer_.252_.5_2.5	Spacer, .252 ID, .5 OD, 2.5 long	4

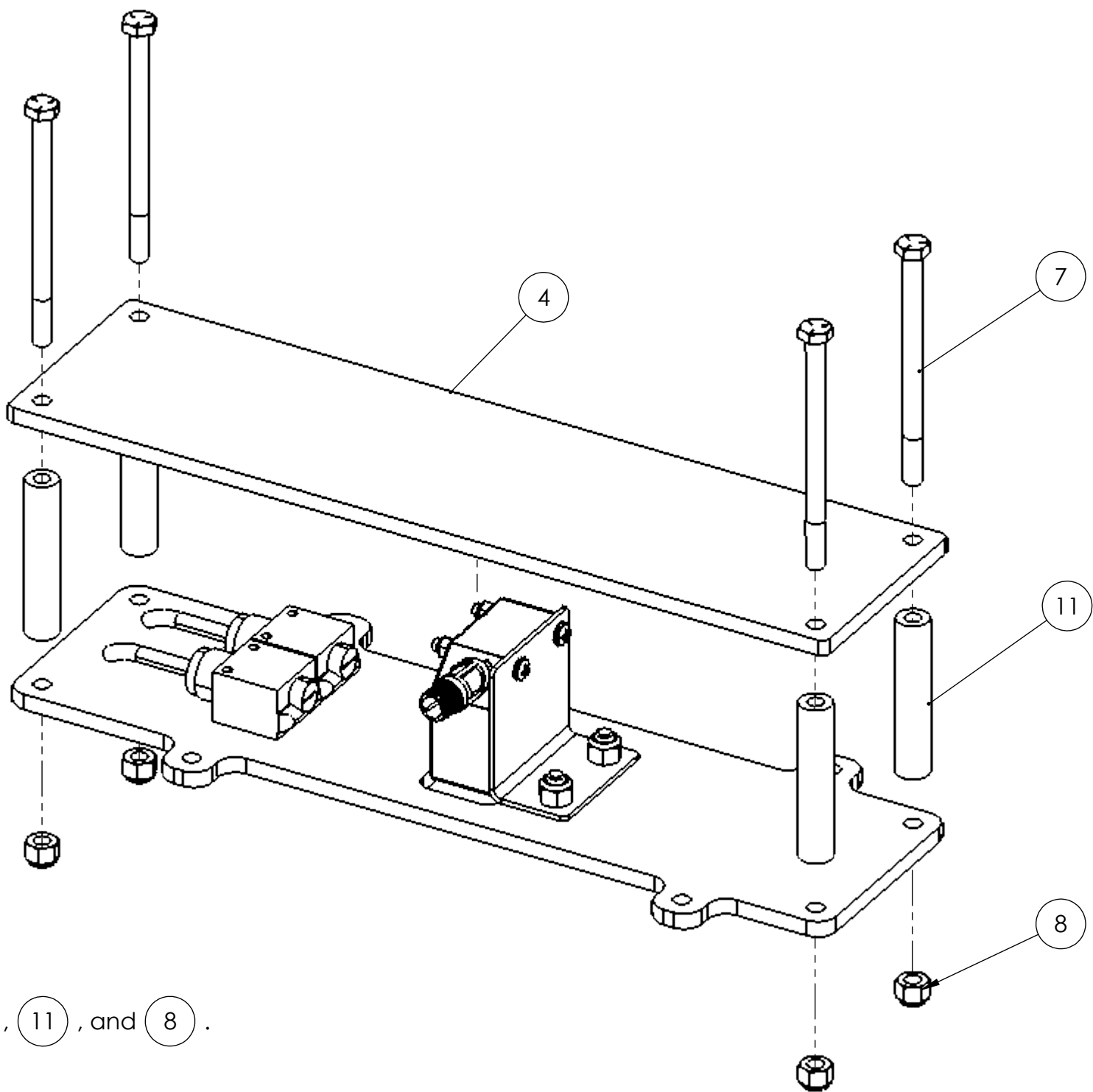
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	12/16/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Sensor Box Assembly	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
SIZE		DWG. NO.		REV	
C		GE-22461			
SCALE: 2:3			SHEET 1 OF 2		





- Notes:
1. Attach 5 to 3 using 6 and 8 .
 2. Attach 1 to 3 .

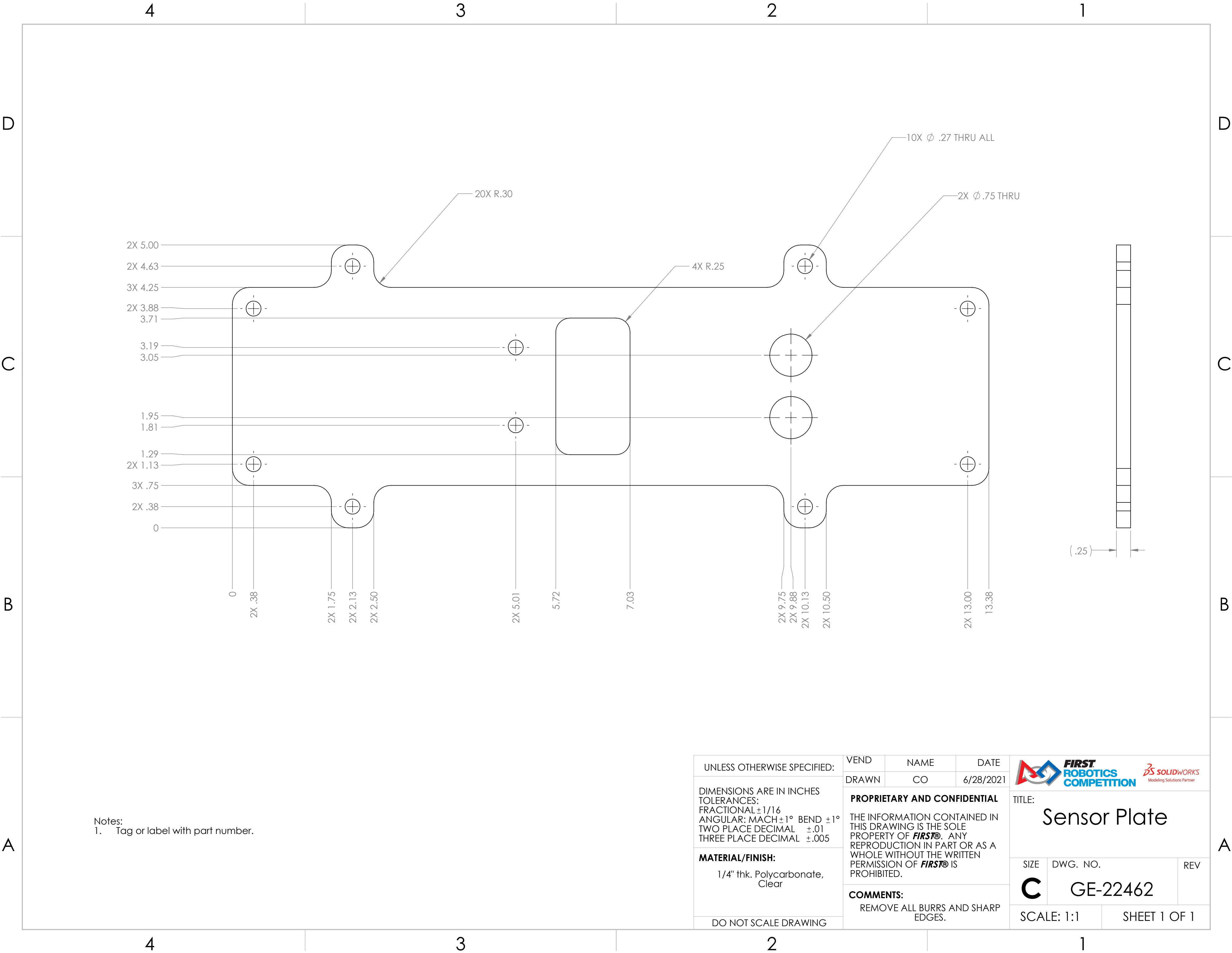




- Notes:
1. Attach 2 to 5 in orientation shown using 9 and 10 .

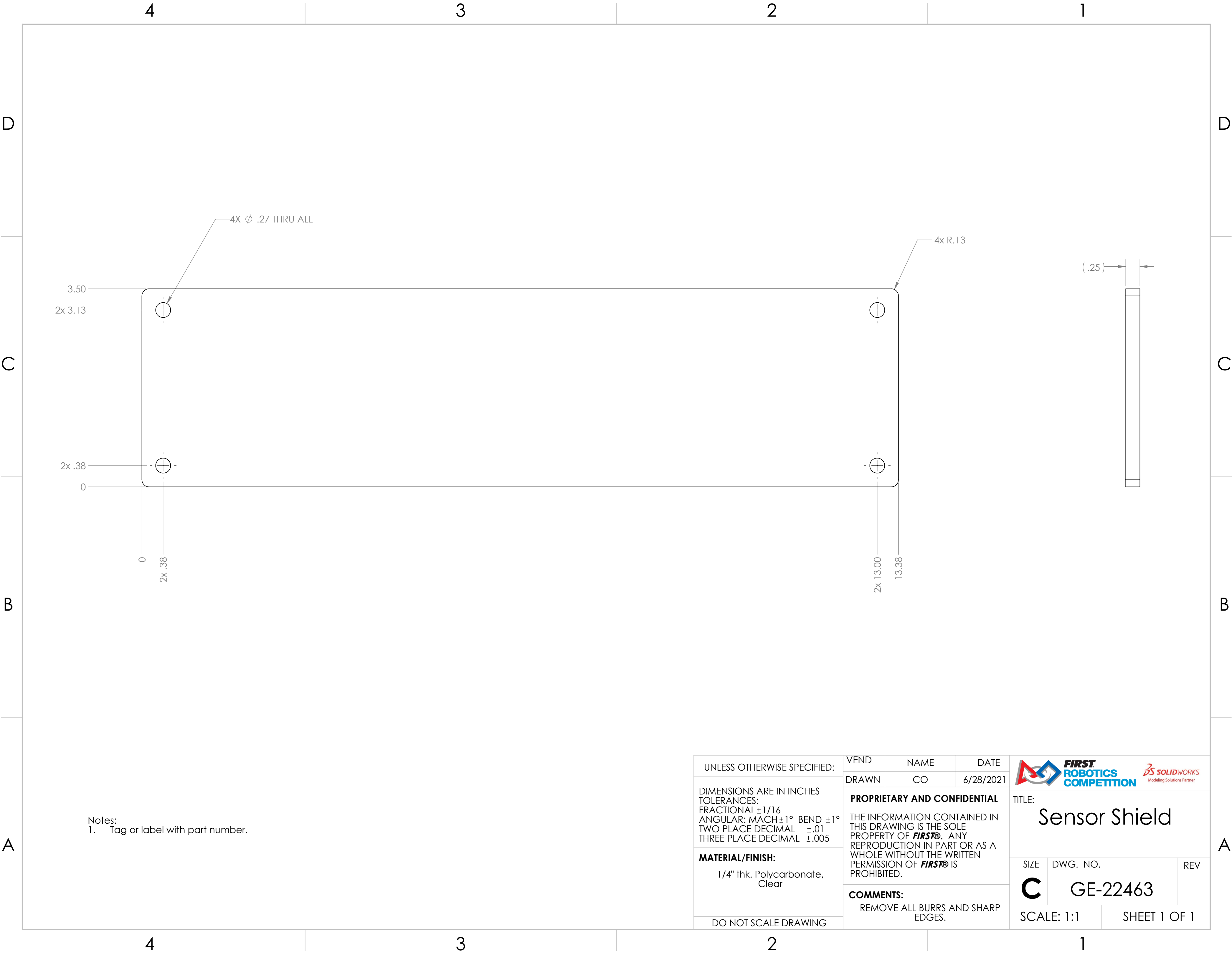


- Notes:
1. Attach 4 to assembly using 7 , 11 , and 8 .



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div>	
	DRAWN	CO	12/16/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
TITLE:				Sensor Box Assembly	
SIZE		DWG. NO.		REV	
C		GE-22461			
SCALE: 1:2			SHEET 2 OF 2		

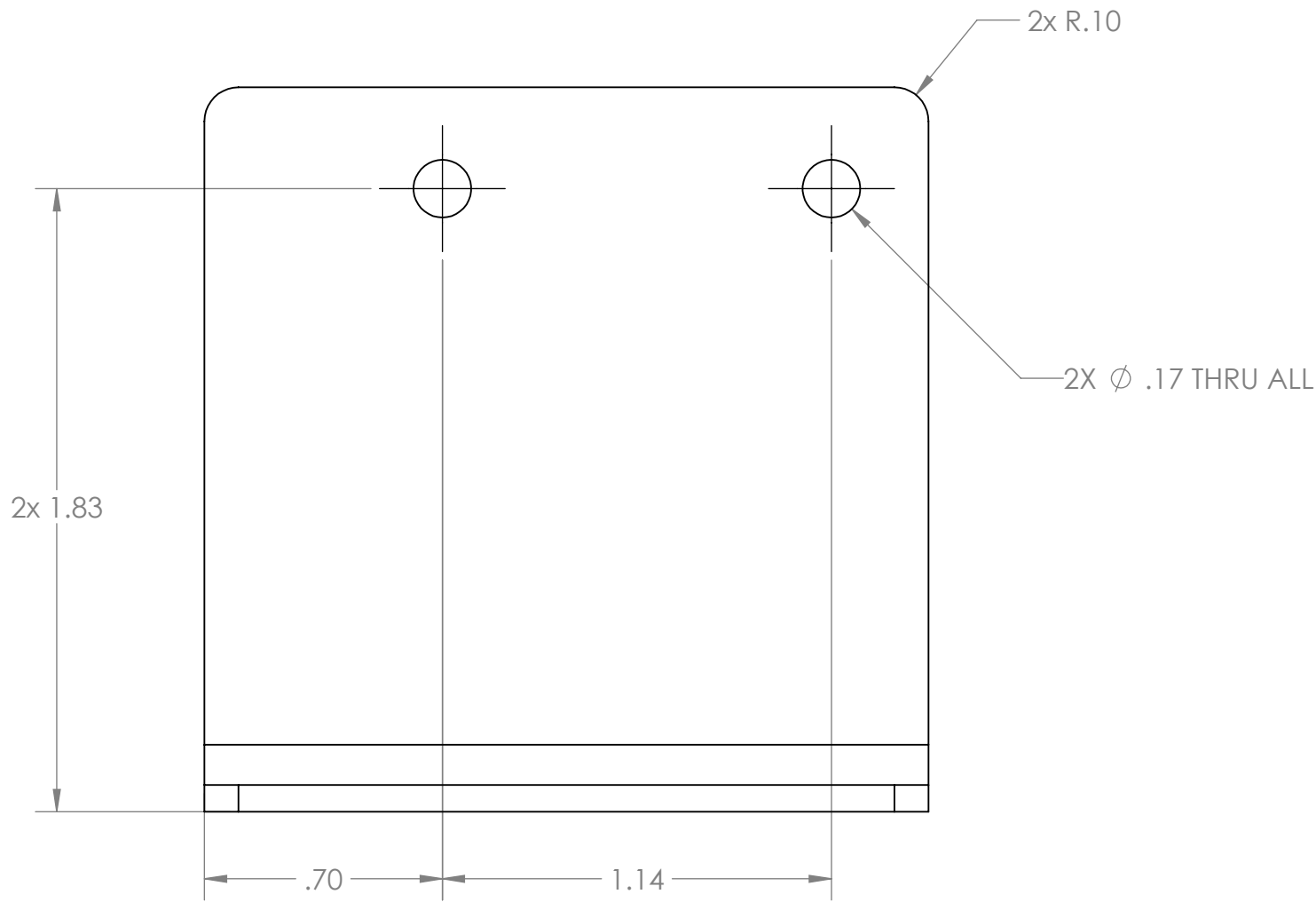
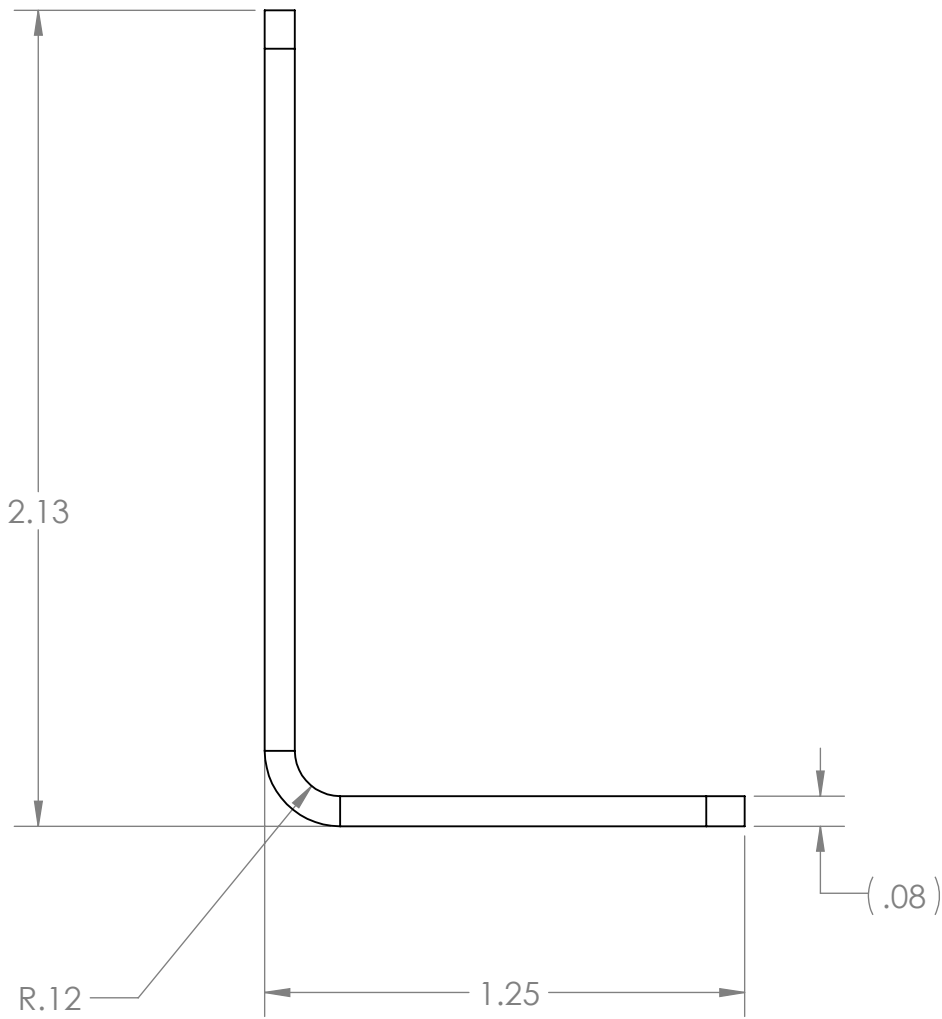
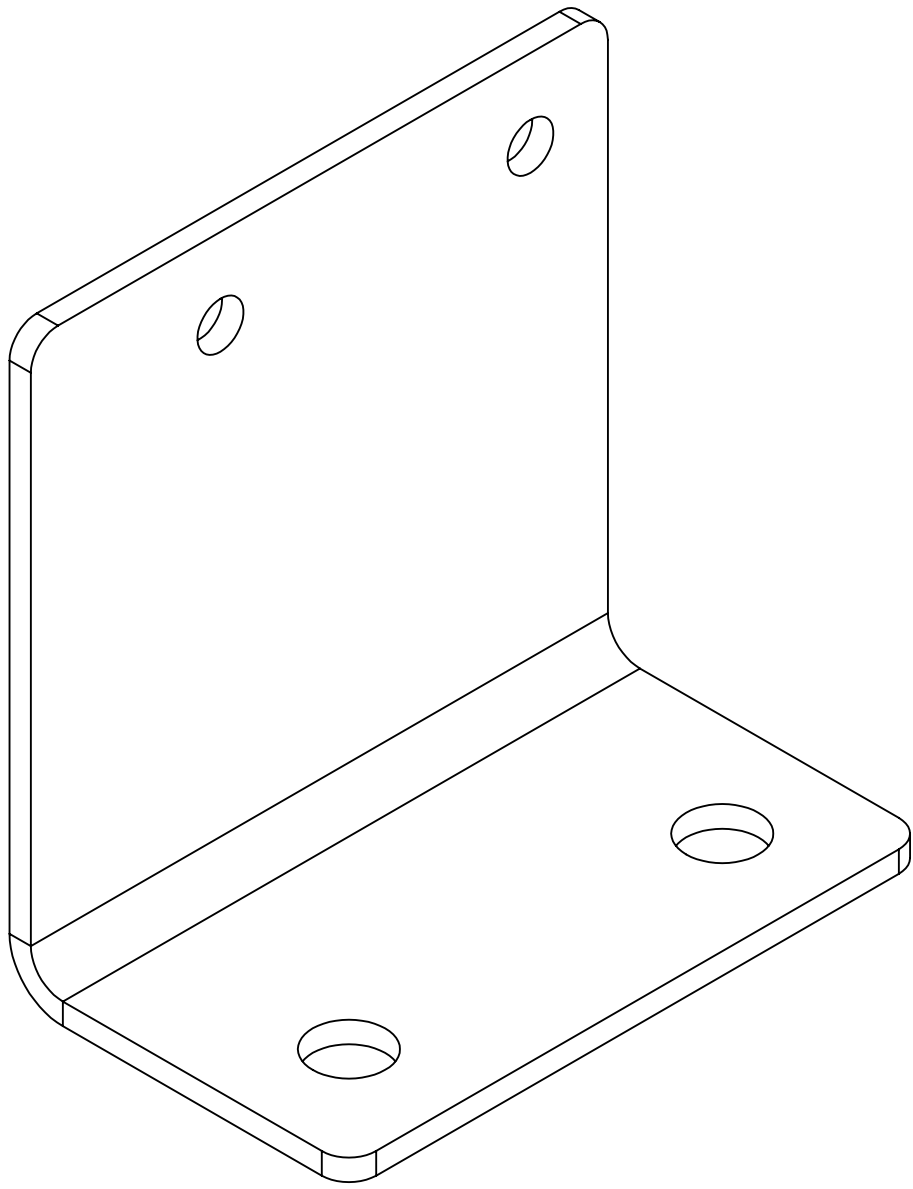
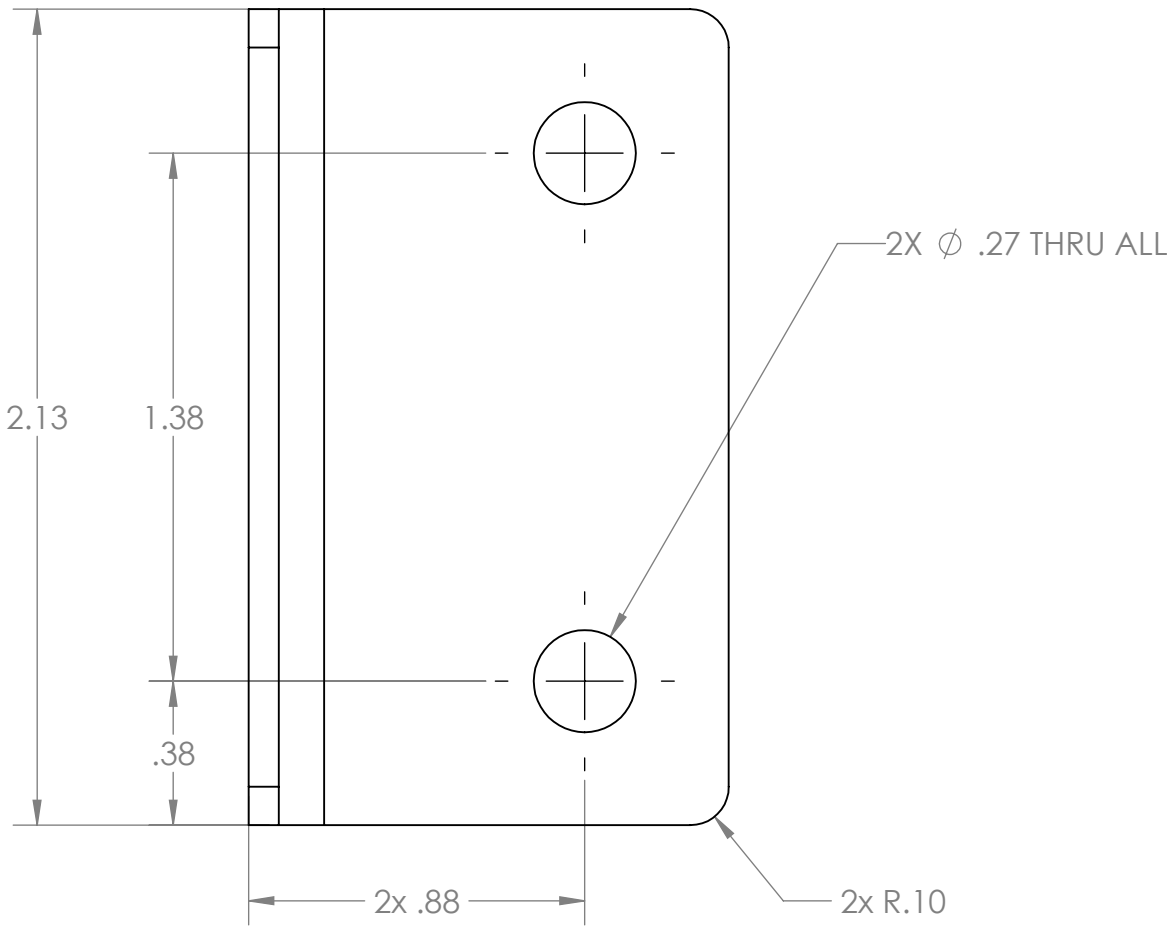


UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	CO	6/28/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE: Sensor Plate		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22462	
DO NOT SCALE DRAWING				SCALE: 1:1		SHEET 1 OF 1





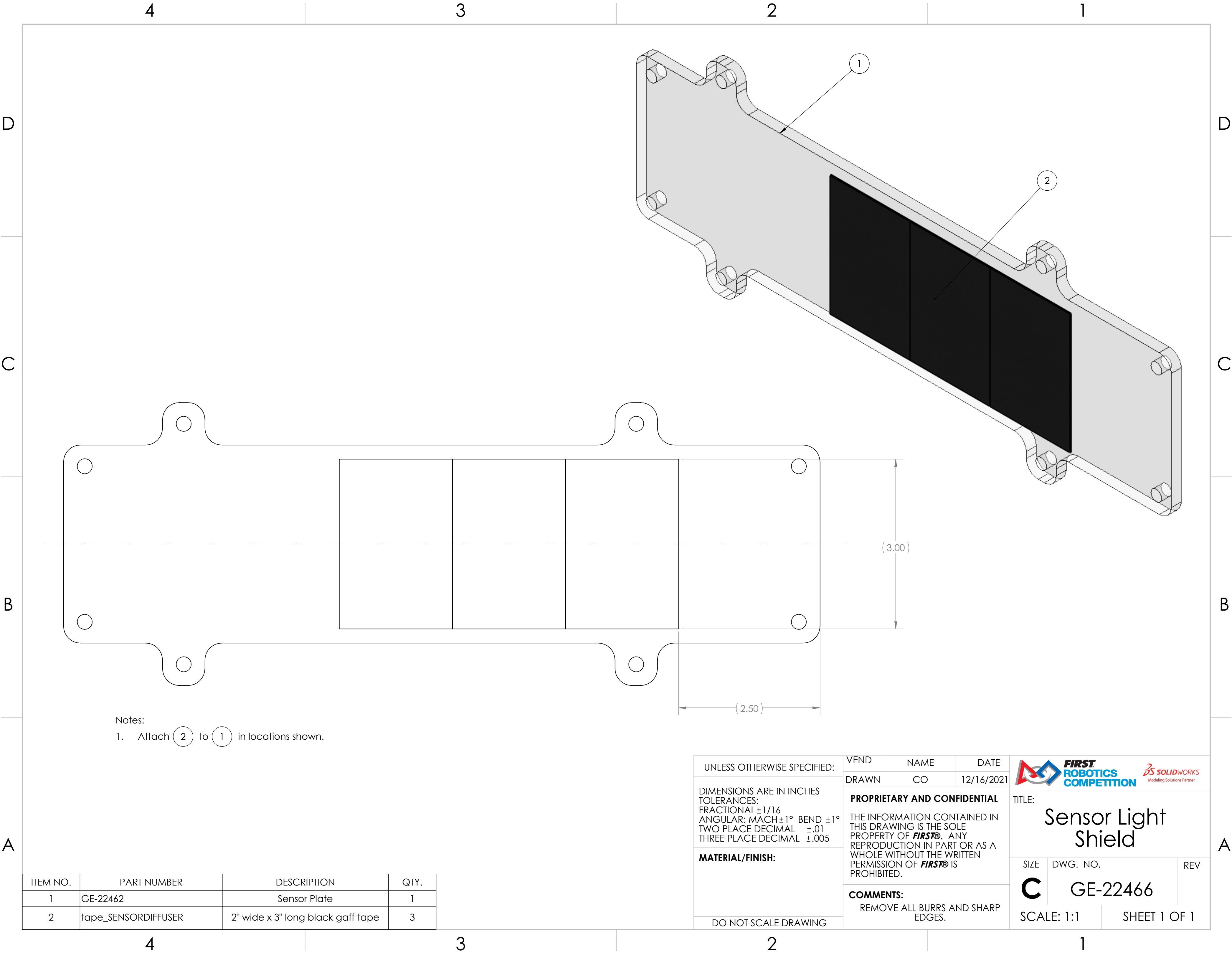
Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Sensor Shield</h1></div>	
	DRAWN	CO	6/28/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			<div><div>SIZE</div><div>C</div></div> <div><div>DWG. NO.</div><div>GE-22463</div></div> <div><div>REV</div><div></div></div>	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear				SCALE: 1:1	
DO NOT SCALE DRAWING				SHEET 1 OF 1	



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	<div></div>	
		DRAWN	CO	6/28/2021		
<div>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$</div> <div>MATERIAL/FINISH: 14 Ga. Preplated steel</div> <div>DO NOT SCALE DRAWING</div>		<div>PROPRIETARY AND CONFIDENTIAL</div> <div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.</div> <div>COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.</div>			TITLE: Color Sensor Bracket	
		SIZE C		DWG. NO. GE-22464		REV
		SCALE: 2:1		SHEET 1 OF 1		



Notes:
1. Attach (2) to (1) in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22462	Sensor Plate	1
2	tape_SENSORDIFFUSER	2" wide x 3" long black gaff tape	3

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	12/16/2021

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Sensor Light Shield		
SIZE C	DWG. NO. GE-22466	REV
SCALE: 1:1		SHEET 1 OF 1

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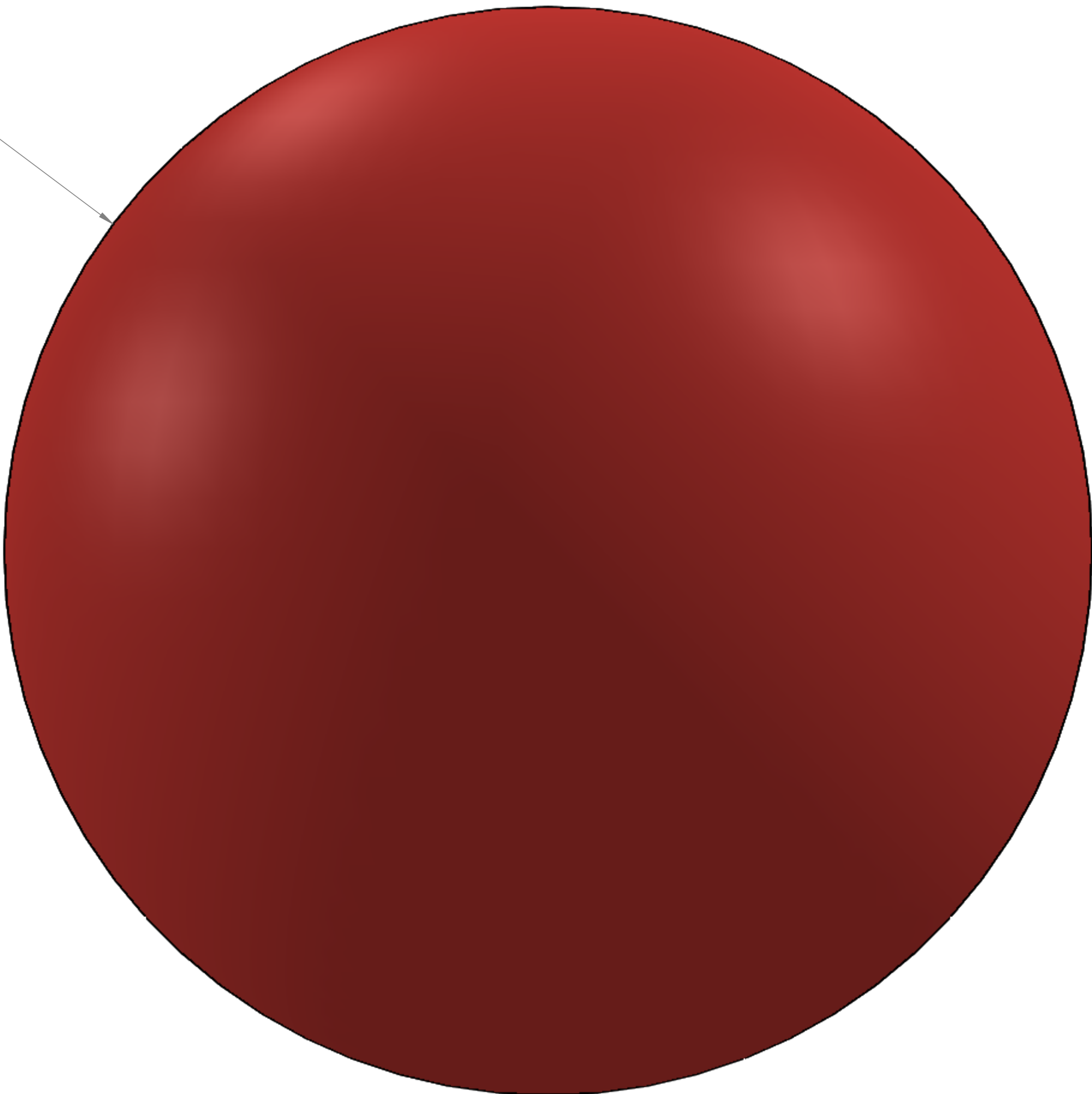
D

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B

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(Ø9.44)



- Notes:
- 1. Description: 9.5 inch oversized tennis ball, red
 - 2. Source: AndyMark
 - 3. Item#: am-4600_red
 - 4. To be inflated to 3.5 PSI

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> TITLE: <div>Cargo - Red</div>		
	DRAWN	CO	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22497	
				SCALE: 1:1		SHEET 1 OF 1

D

C

B

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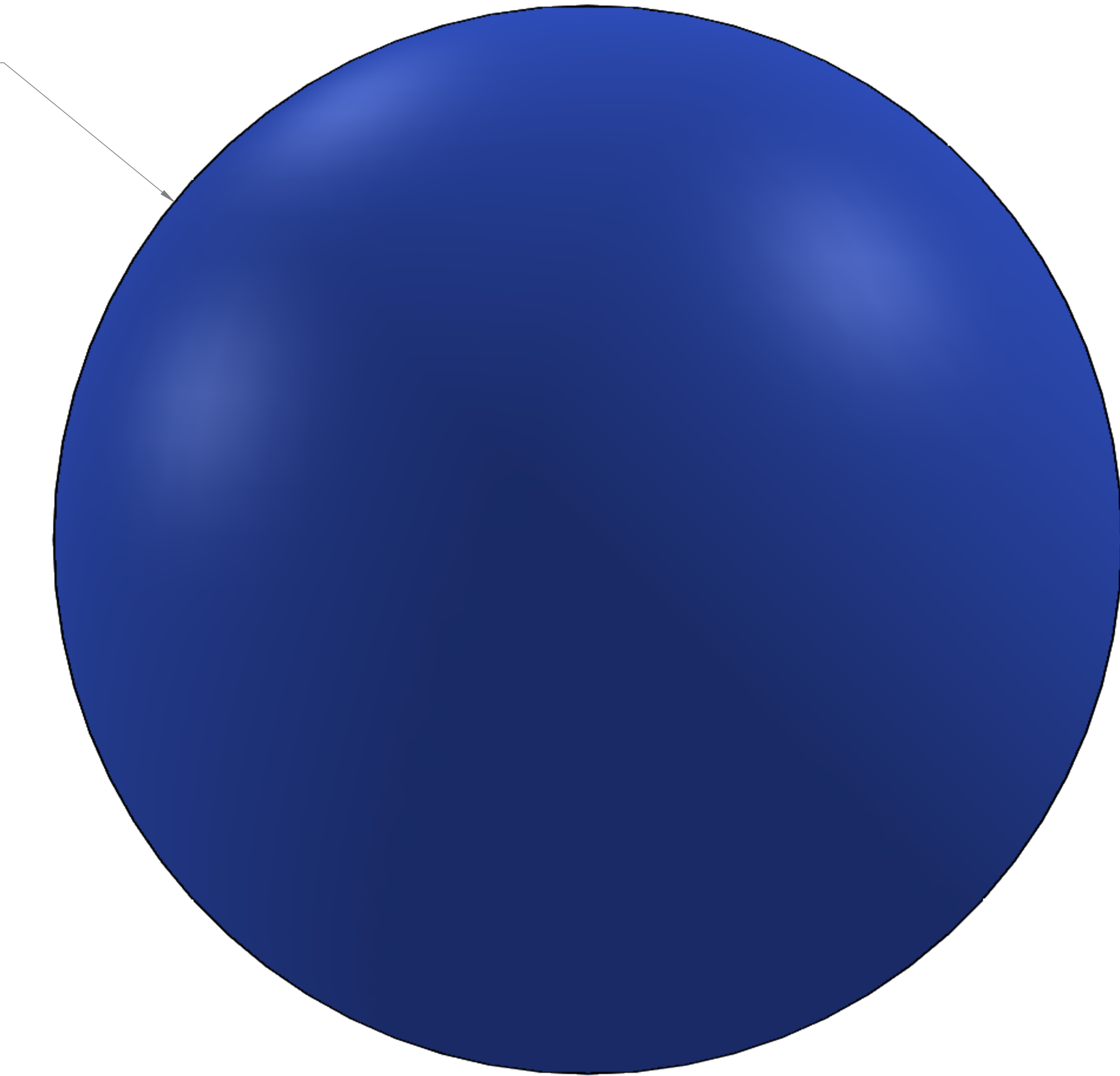
D

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(Ø 9.44)

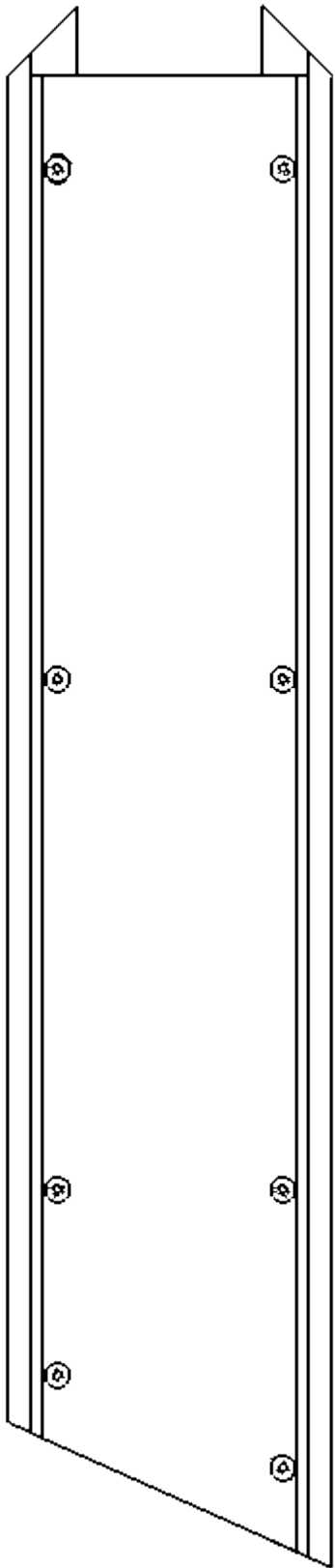
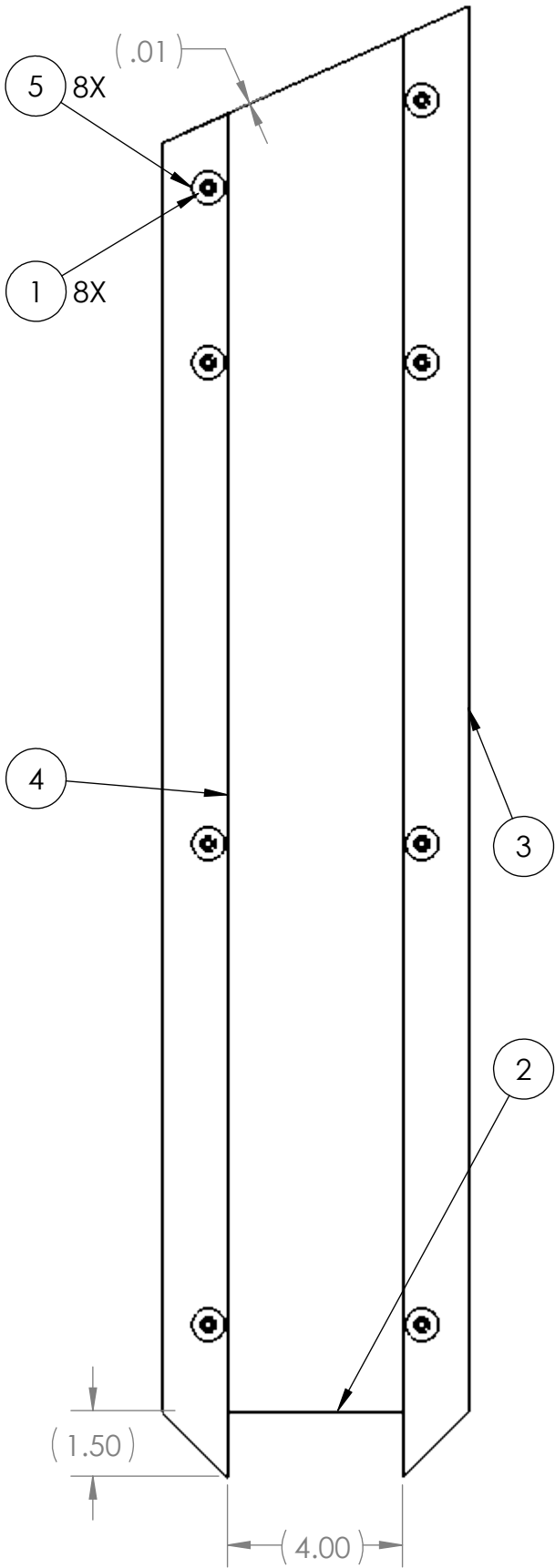


- Notes:
- 1. Description: 9.5 inch oversized tennis ball, blue
 - 2. Source: AndyMark
 - 3. Item#: am-4600_blue
 - 4. To be inflated to 3.5 PSI

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> TITLE: <div>Cargo - Blue</div>		
	DRAWN	CO	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-22498	
				SCALE: 1:1		SHEET 1 OF 1



4			
ITEM NO.	PART NUMBER	DESCRIPTION	
1	Flat Hex .25_20_.75	Flat Hex .25_20_.75	8
2	GE-22601	Cable protector top angled	1
3	GE-22602	Cable protector side right angled	1
4	GE-22603	Cable protector side left angled	1
5	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant	8

1				
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Added sheet 2	1/5/2022	DAF

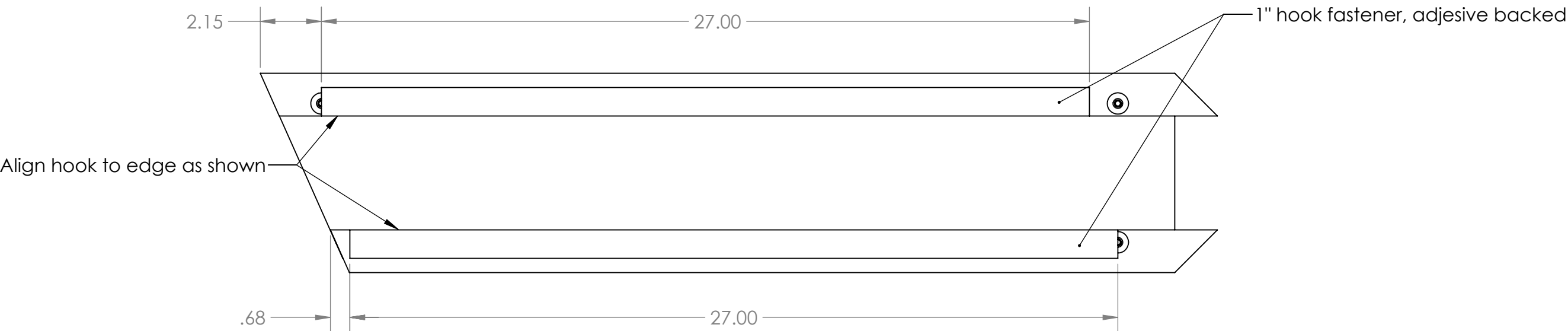




- Notes:
- Insert 5 8X to 4 and 3 .
 - Attach 2 to 4 and 3 with 1 8X .

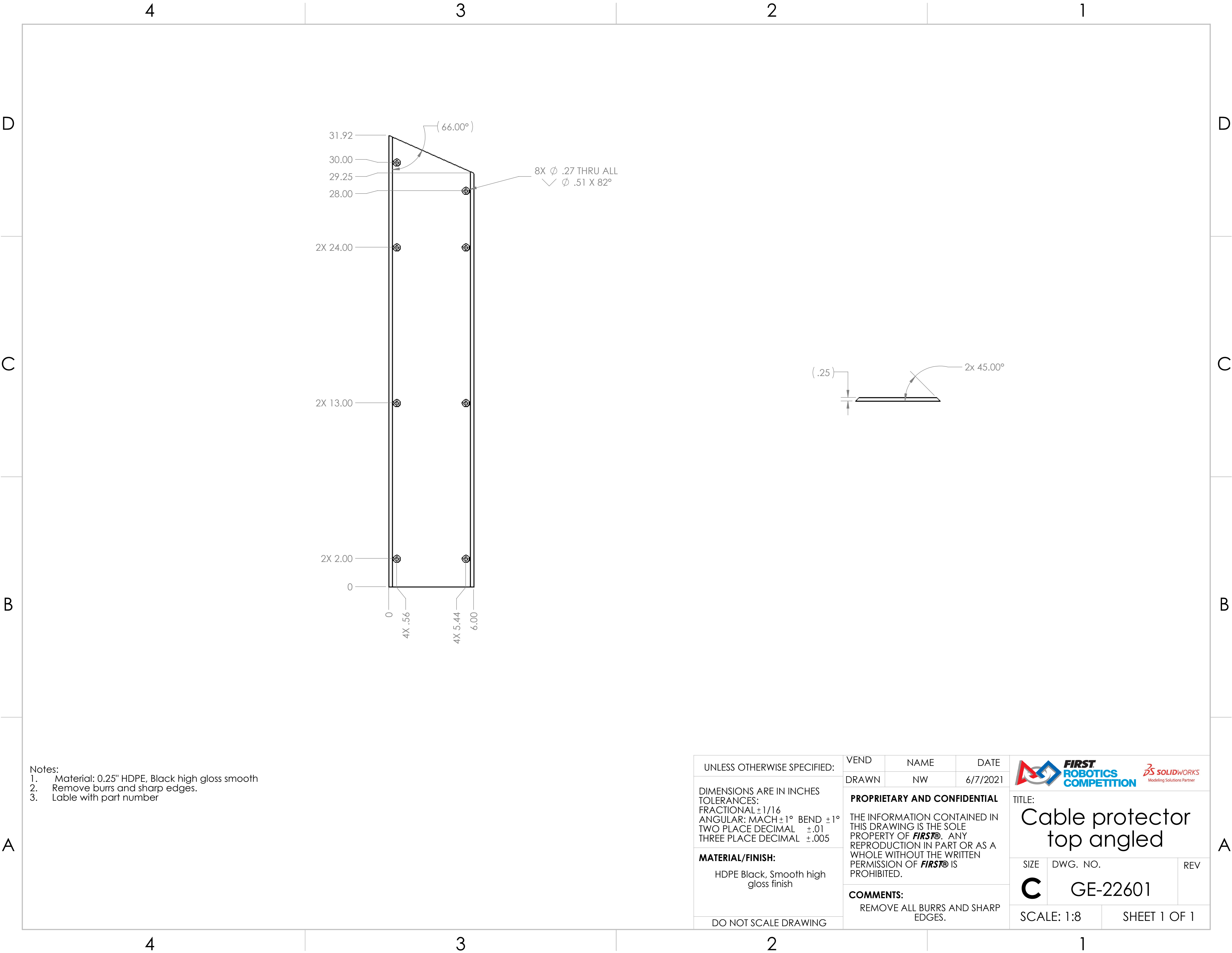
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: DO NOT SCALE DRAWING	VEND	NAME	DATE
	DRAWN	NW	7/29/2021
	PROPRIETARY AND CONFIDENTIAL		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Angled cable protector		
SIZE C	DWG. NO. GE-22600	REV A
SCALE: 1:4		SHEET 1 OF 2



Post Manufaturing Instructions

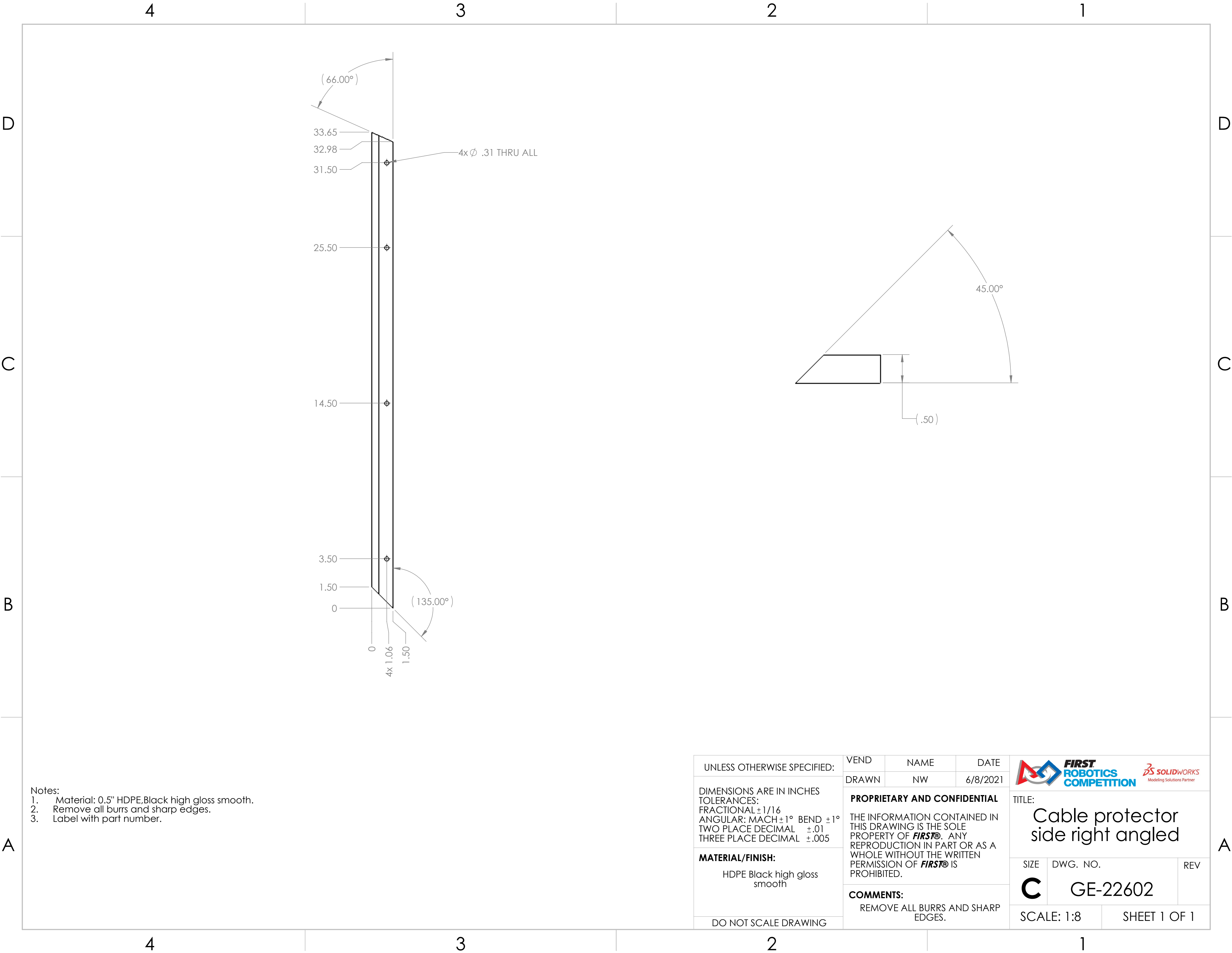


UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: Angled cable protector</div>		
	DRAWN	NW	7/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22600	A
MATERIAL/FINISH:				SCALE: 1:4		SHEET 2 OF 2
DO NOT SCALE DRAWING						





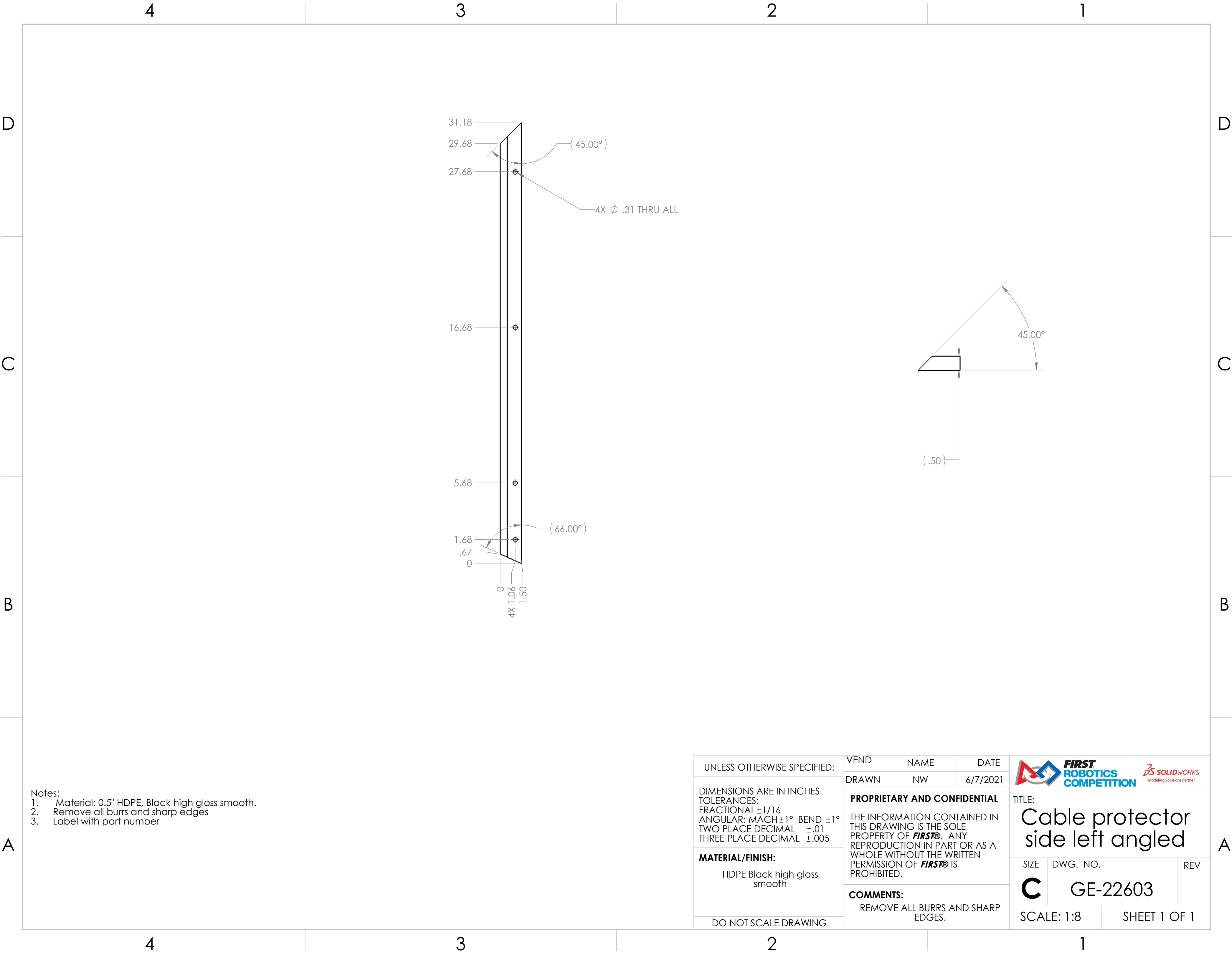
Notes:
1. Material: 0.25" HDPE, Black high gloss smooth
2. Remove burrs and sharp edges.
3. Lable with part number

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	NW	6/7/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Cable protector top angled		
MATERIAL/FINISH: HDPE Black, Smooth high gloss finish	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-22601	
DO NOT SCALE DRAWING				SCALE: 1:8		SHEET 1 OF 1





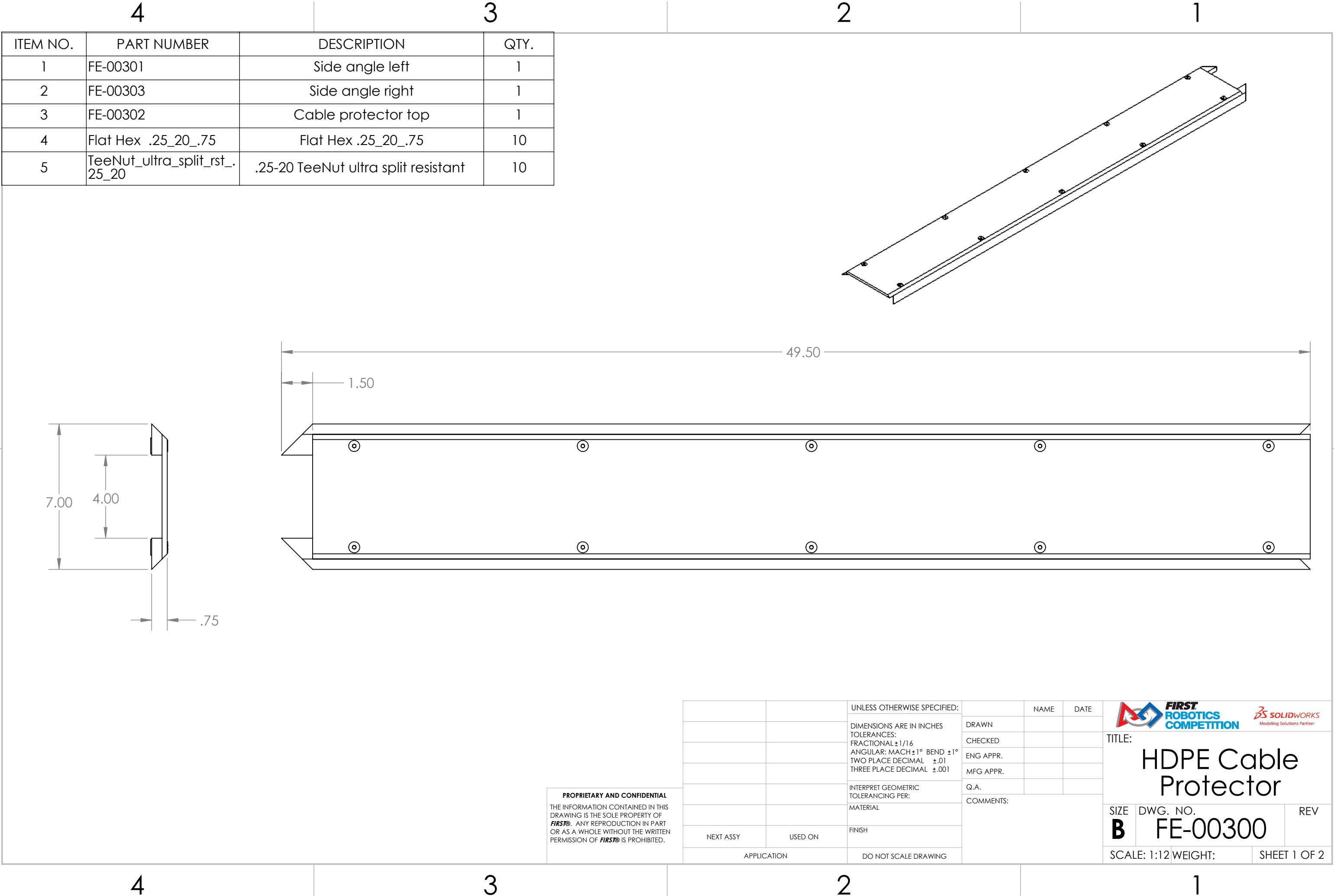
Notes:
1. Material: 0.5" HDPE,Black high gloss smooth.
2. Remove all burrs and sharp edges.
3. Label with part number.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005 MATERIAL/FINISH: HDPE Black high gloss smooth DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Cable protector side right angled</div>		
	DRAWN	NW	6/8/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22602	
		SCALE: 1:8		SHEET 1 OF 1		





- Notes:
1. Material: 0.5" HDPE, Black high gloss smooth.
 2. Remove all burrs and sharp edges
 3. Label with part number

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ MATERIAL/FINISH: HDPE Black high glass smooth DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Cable protector side left angled</div>		
	DRAWN	NW	6/7/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22603	
		SCALE: 1:8		SHEET 1 OF 1		



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div></div><div>TITLE: <h1>HDPE Cable Protector</h1></div><div>SIZE B DWG. NO. FE-00300 REV</div><div>SCALE: 1:12 WEIGHT: SHEET 1 OF 2</div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN					
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

4

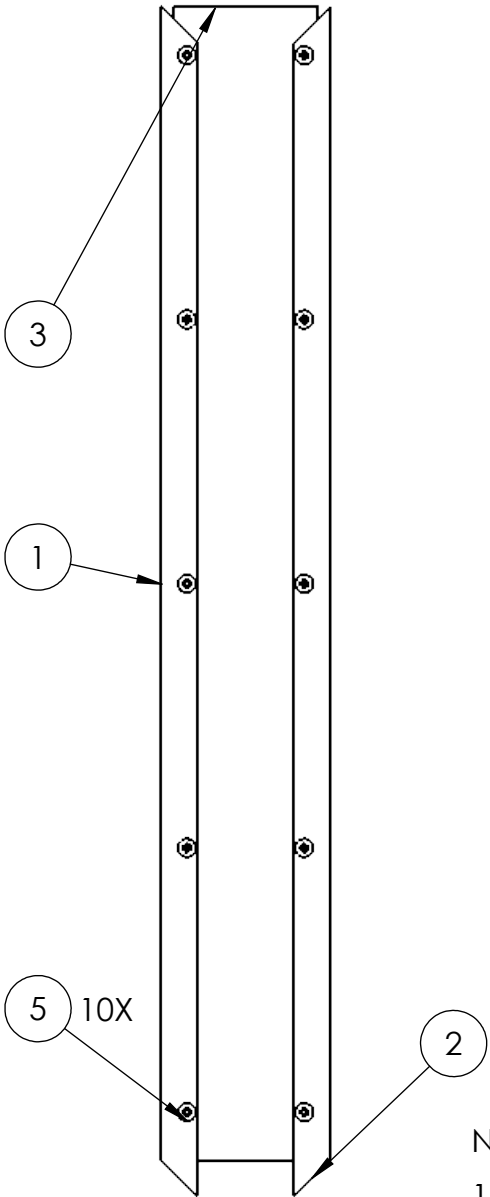
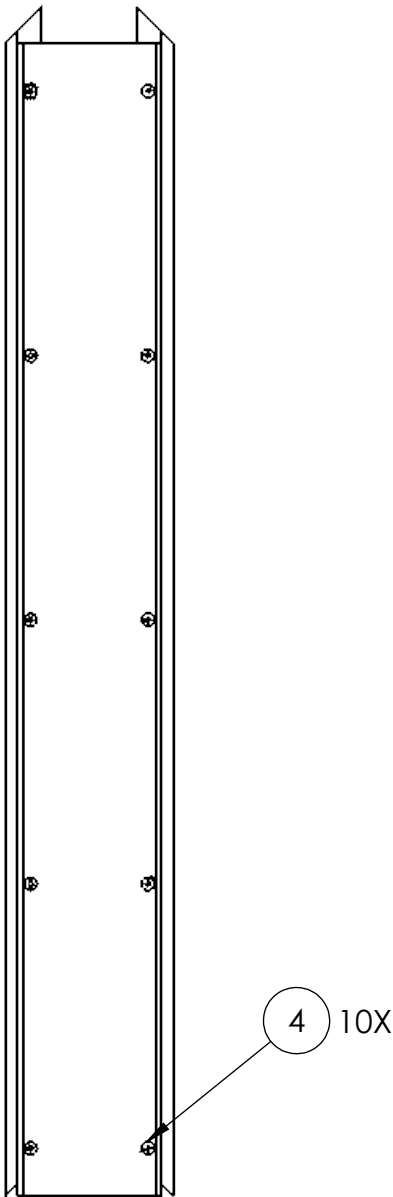
3

2

1

B

B





- Notes:
- 1. Instert 5 10X in to the bottom of 1 and 2 .
 - 2. Attach 3 to 1 an 2 with 4 10X .

A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: HDPE Cable Protector		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV B FE-00300		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:12					

4

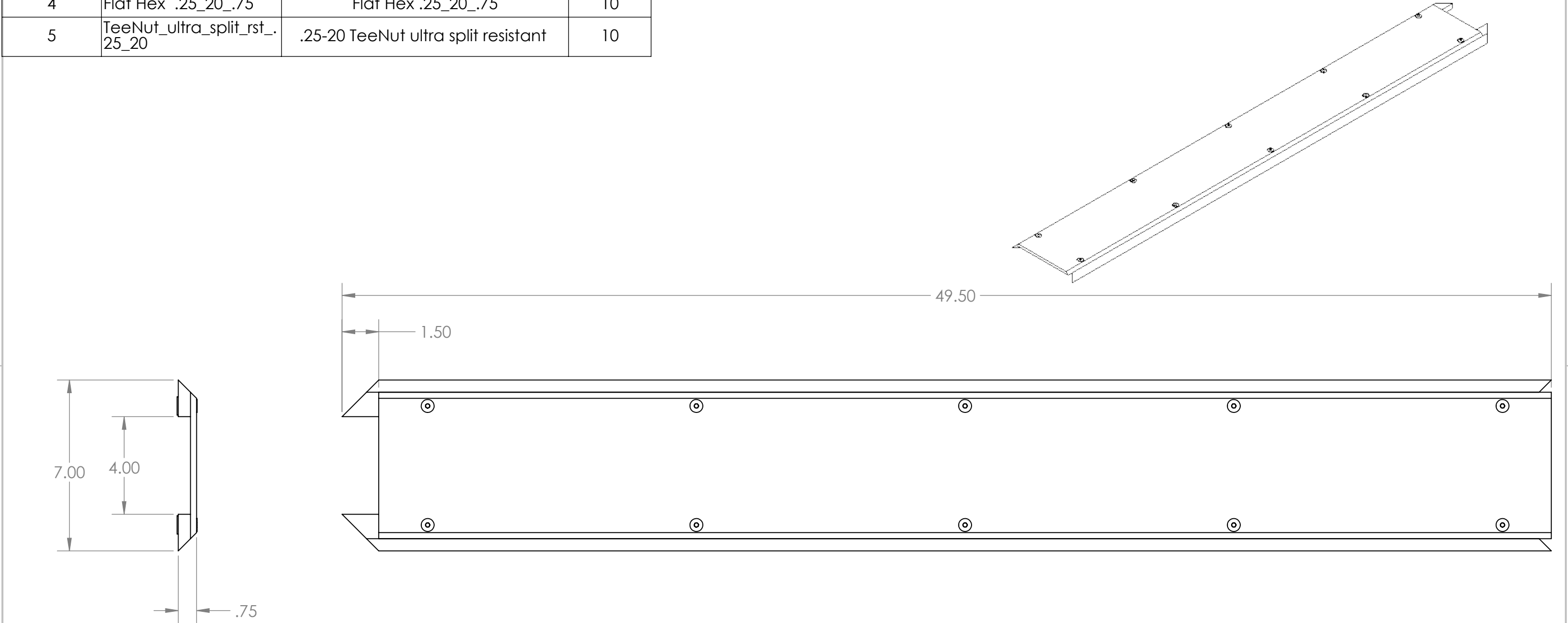
3

2



1

4				3				2				1			
ITEM NO.	PART NUMBER	DESCRIPTION													
1	FE-00301	Side angle left		1											
2	FE-00303	Side angle right		1											
3	FE-00302	Cable protector top		1											
4	Flat Hex .25_20_.75	Flat Hex .25_20_.75		10											
5	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant		10											

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Added sheet 3	1/5/2022	DAF



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: HDPE Cable Protector			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON					SIZE B	DWG. NO. FE-00300	REV A	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12		WEIGHT:	SHEET 1 OF 3



TITLE:
HDPE Cable Protector

SIZE **B** DWG. NO. **FE-00300** REV **A**

SCALE: 1:12 WEIGHT: SHEET 1 OF 3

4

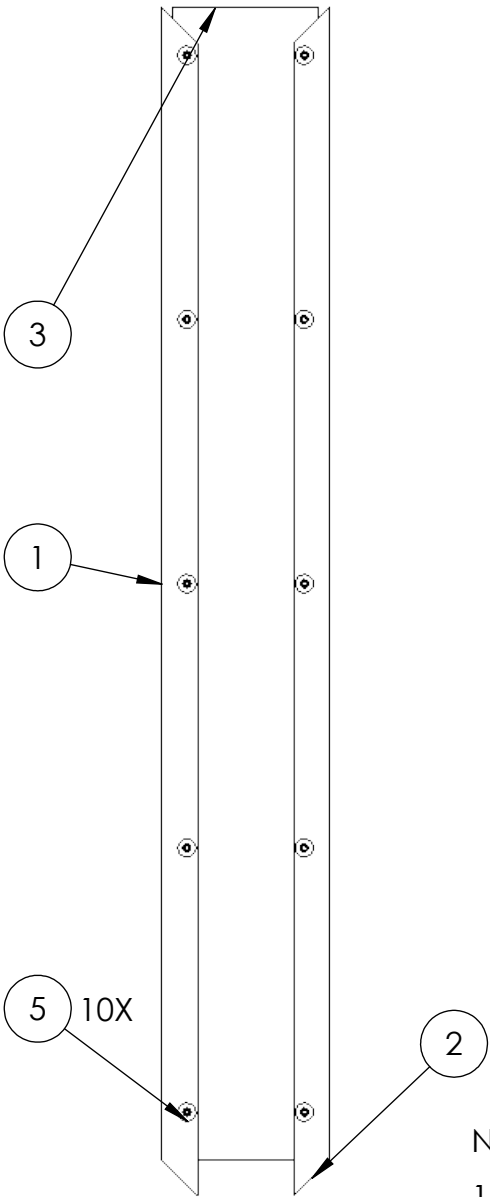
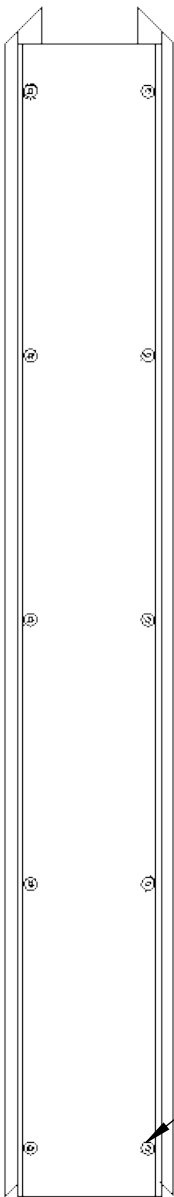
3

2

1

B

B





- Notes:
1. Insert (5) 10X in to the bottom of (1) and (2) .
 2. Attach (3) to (1) an (2) with (4) 10X .

A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 					
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <h1>HDPE Cable Protector</h1>					
		TOLERANCES:	CHECKED								
		FRACTIONAL $\pm 1/16$	ENG APPR.								
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.								
		TWO PLACE DECIMAL $\pm .01$	Q.A.								
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.		REV	
		INTERPRET GEOMETRIC TOLERANCING PER:				B		FE-00300		A	
		MATERIAL				SCALE: 1:12		WEIGHT:		SHEET 2 OF 3	
NEXT ASSY	USED ON	FINISH									
APPLICATION		DO NOT SCALE DRAWING									

4

3

2

1

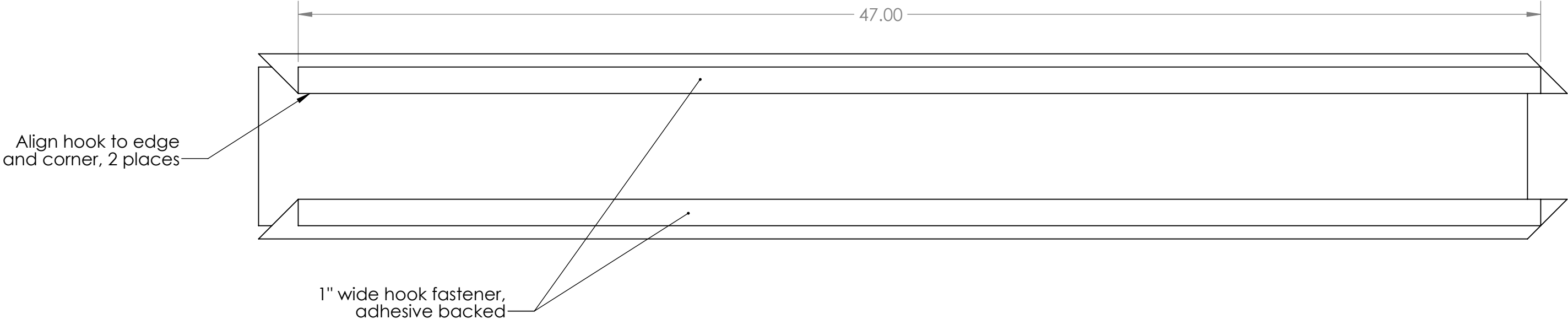
4

3

2

1

Post Manufacturing Instructions





B

B

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: <h1>HDPE Cable Protector</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV B FE-00300 A		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:12					

4

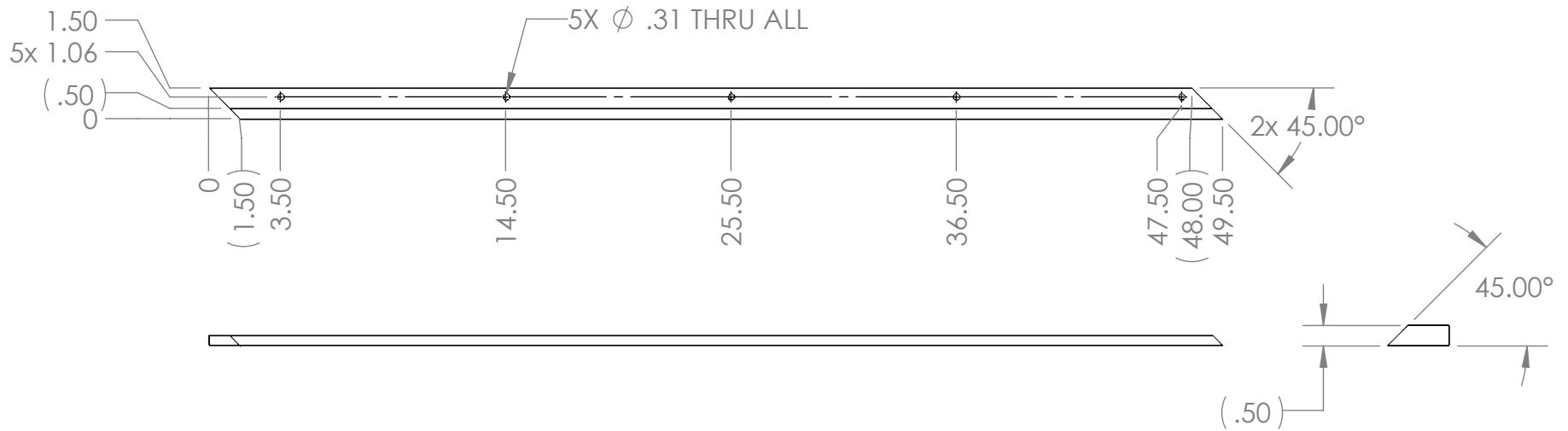
3

2

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B

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		UNLESS OTHERWISE SPECIFIED:
		DIMENSIONS ARE IN INCHES
		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
		HDPE Black
		FINISH
NEXT ASSY	USED ON	
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		



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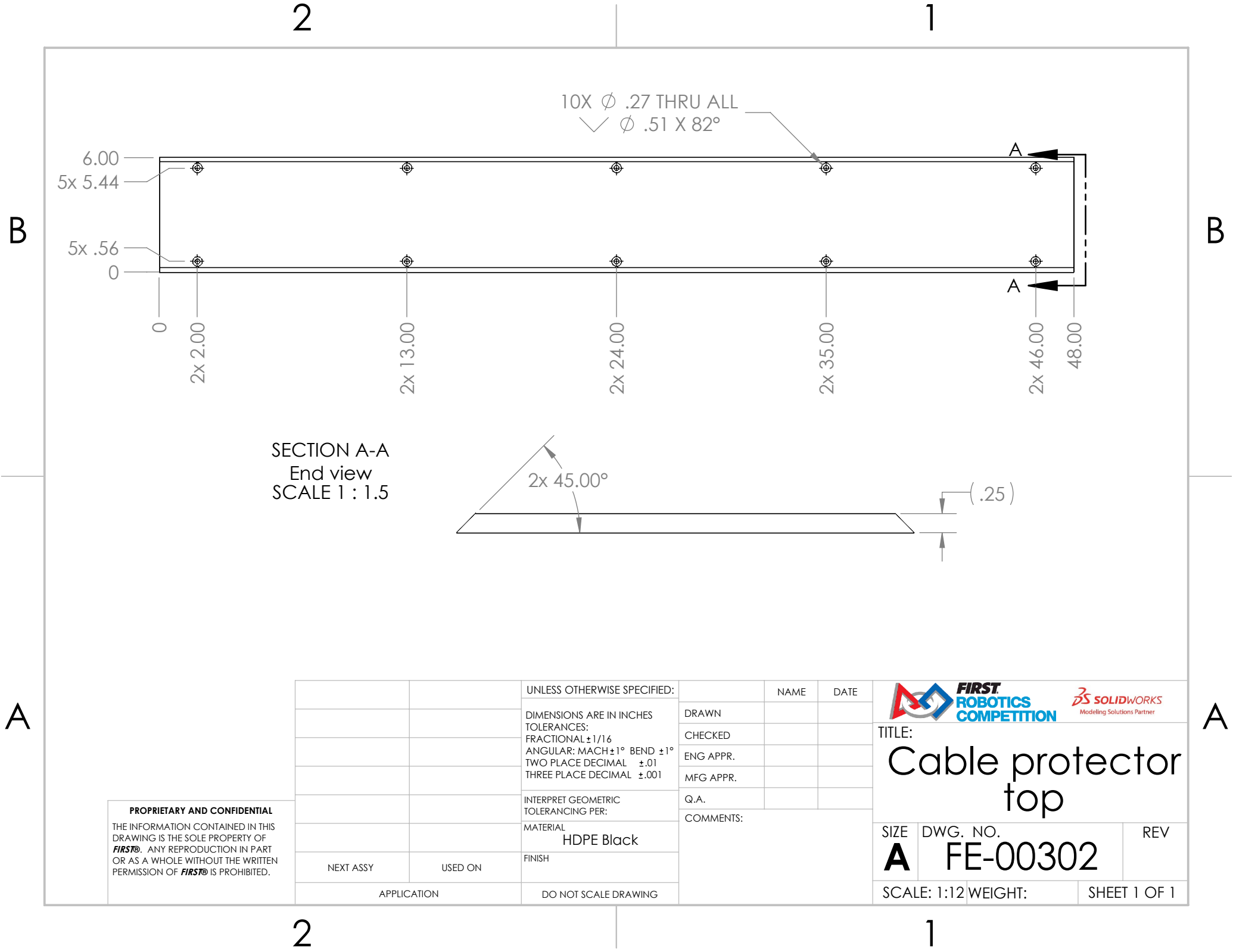
TITLE:

Side angle left

SIZE	DWG. NO.	REV
A	FE-00301	
SCALE: 1:12		WEIGHT:
		SHEET 1 OF 1

2

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		UNLESS OTHERWISE SPECIFIED:
		DIMENSIONS ARE IN INCHES
		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
		HDPE Black
		FINISH
NEXT ASSY	USED ON	
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

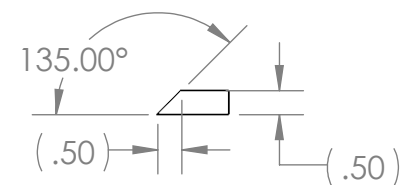
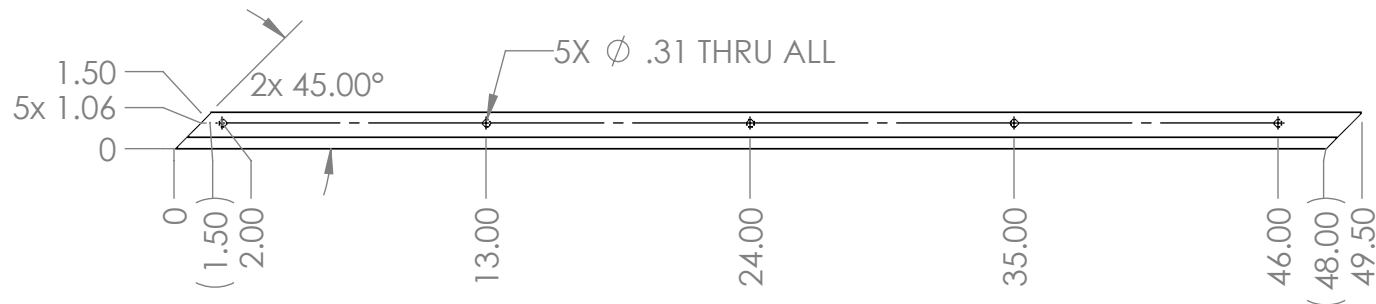
 		
TITLE:		
Cable protector top		
SIZE	DWG. NO.	REV
A	FE-00302	
SCALE: 1:12		WEIGHT:
		SHEET 1 OF 1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		HDPE Black			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



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TITLE:

Side angle right

SIZE

A

DWG. NO.

FE-00303

REV

SCALE: 1:12 WEIGHT:

SHEET 1 OF 1

2

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2

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D

D

C

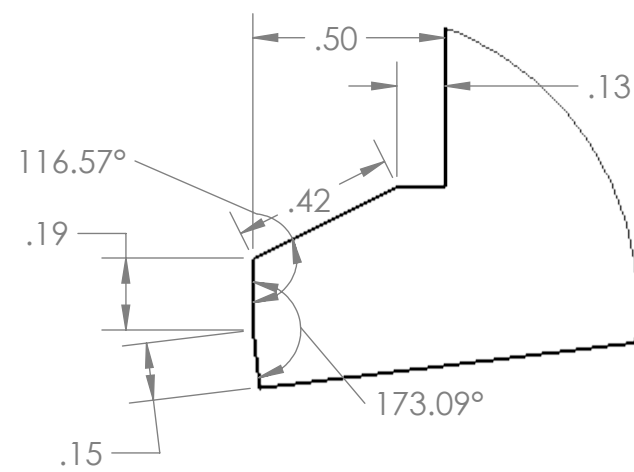
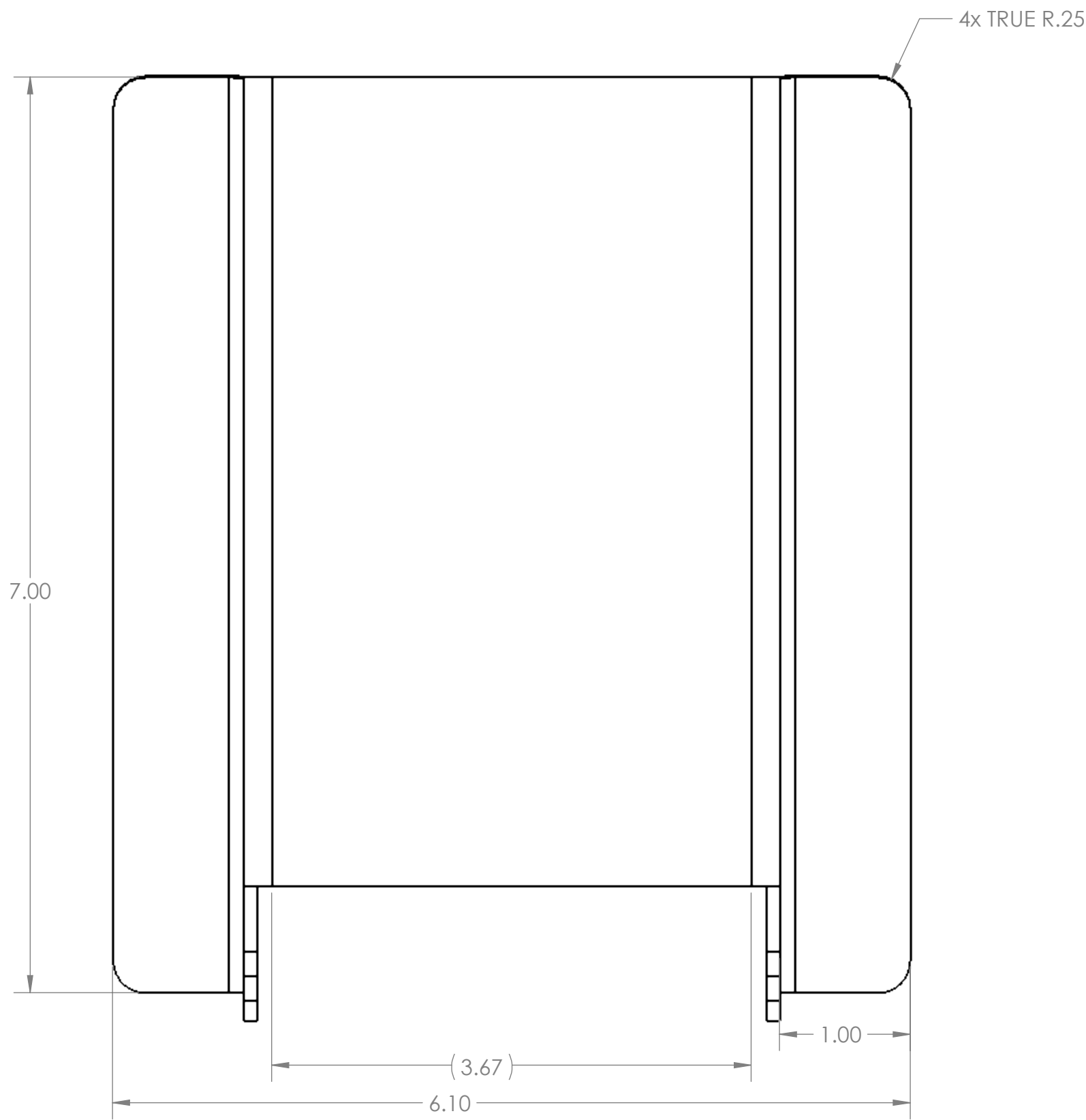
C

B

B

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DETAIL A
SCALE 2 : 1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:
12 gau steel podwer coated
black

DO NOT SCALE DRAWING

BEND

DRAWN

NAME

NW

DATE

7/8/2021

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COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.



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TITLE:

Cable protector
exit segment

SIZE

C

DWG. NO.

FE-00304

REV

SCALE: 1:1

SHEET 1 OF 1

D

C

B

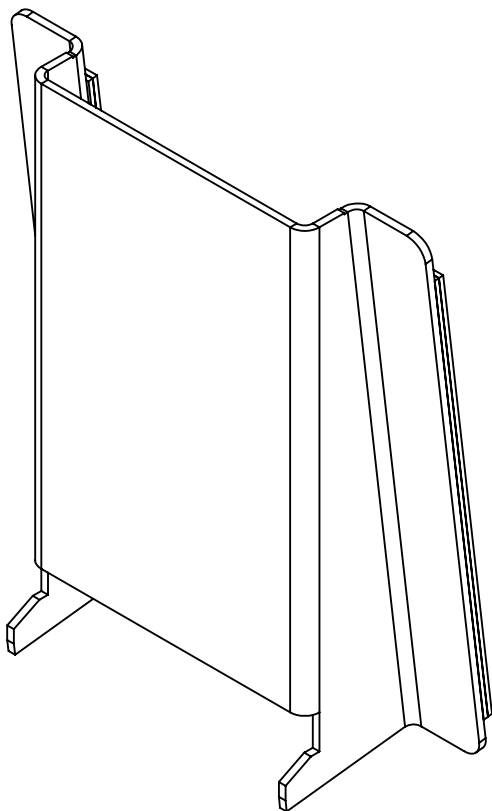
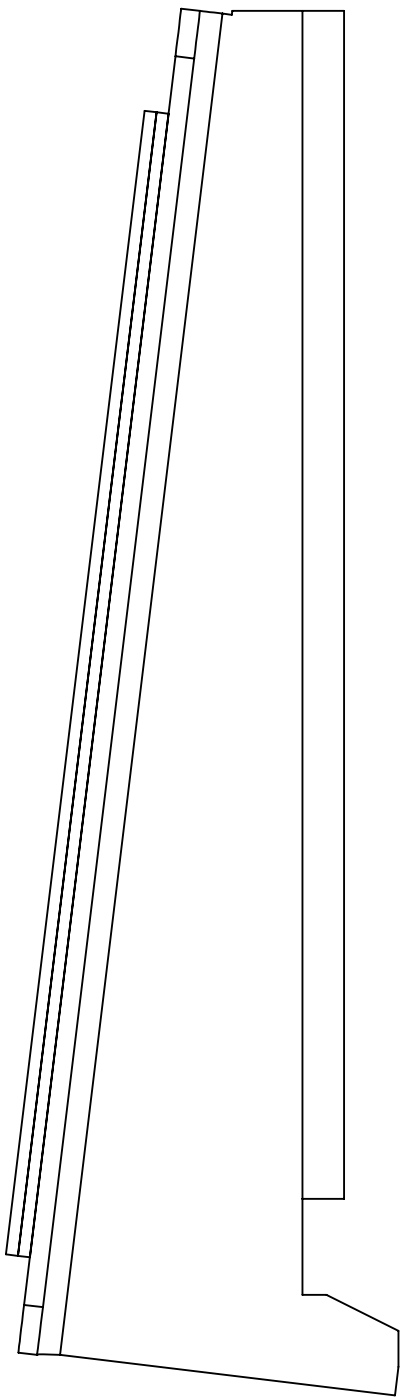
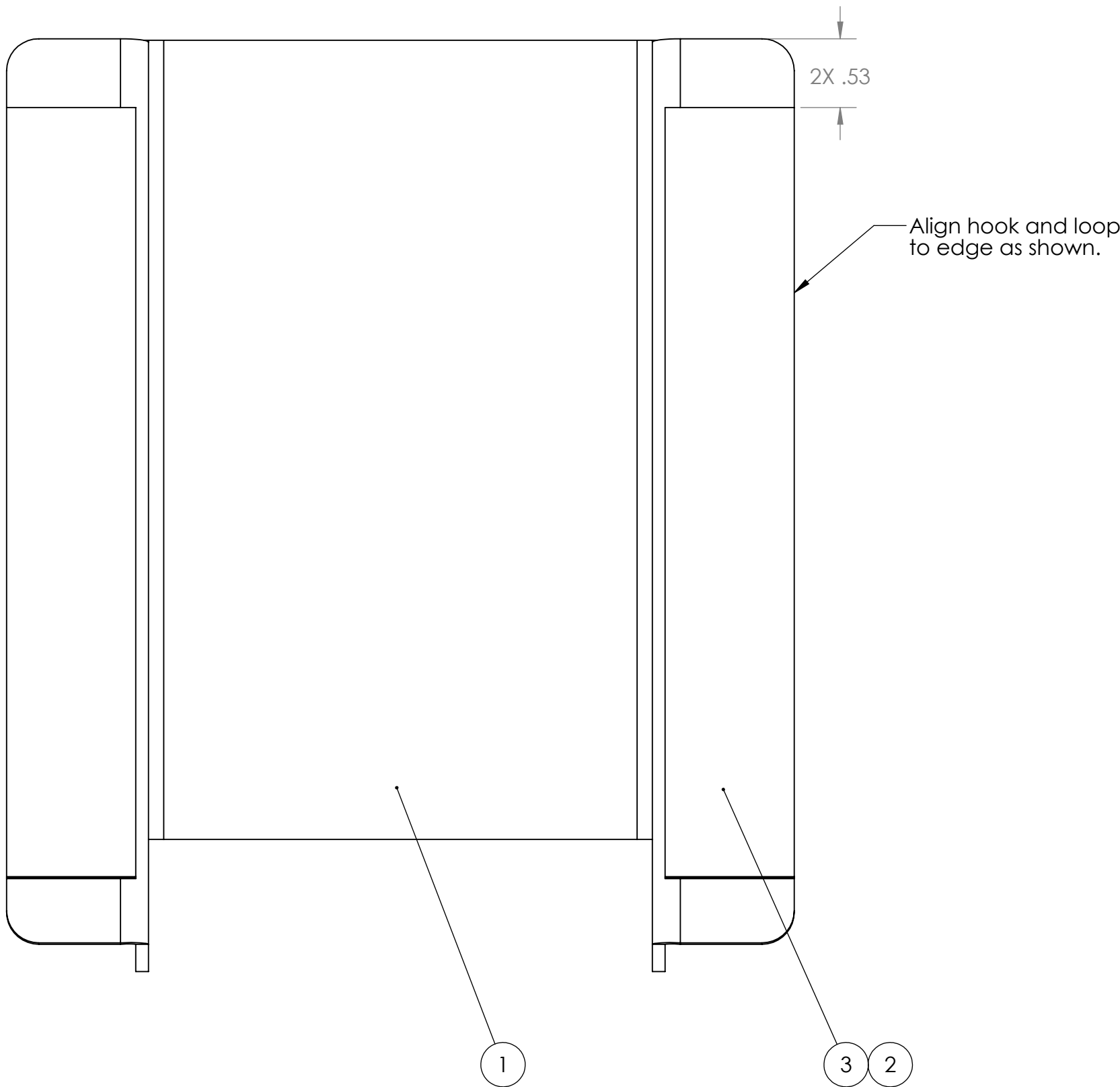
A

D

C



B

A



- Assembly Notes:
1. Apply hook fastener to FE-00304.
 2. Apply loop fastener to the hook fastener, but leave the plastic backing on the adhesive until assembly on the field

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00304	Cable protector exit segment	1
2	Hook_1_6	1" x 6" Hook, Adhesive Backed	2
3	Loop_1_6	1" x 6" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50 MATERIAL/FINISH: DO NOT SCALE DRAWING	FIELD	NAME	DATE	<div></div> <div>TITLE: Cable protector exit segment with hook</div>			
	DRAWN	DF	1/5/2022				
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				C	FE-00305	
				SCALE: 1:1		SHEET 1 OF 1	